INSTITUTE OF AGRICULTURAL RESEARCH STATISTICS

NATIONAL INDEX
OF
AGRICULTURAL
FIELD
EXPERIMENTS

VOL. 4 PART 2

GUJARAT

1954–59

सत्यमेव जयते

PUBLISHED BY
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
NEW DELHI

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FOREWORD

Increase in agricultural production is one of the main objectives of our agricultural planning. It is only by the exploitation of scientific methods of agriculture that we can hope to increase our agricultural production to the level needed for maintaining a reasonable standard of living to the country's population. The technical worth of improvement measures is best judged from carefully conducted field experiments. While it is true that a large number of agricultural field experiments are conducted in the country, the results of these experiments have not been brought together in an integrated manner for the use of research workers. The absence of such a unified account has often led to duplication of work and delay in the utilisation of results for practical farming. The Institute of Agricultural Research Statistics has rendered a very valuable service by preparing a compendium of agricultural field experiments conducted in the country. The first series of compendium containing the results of all agricultural field experiments during the period 1948-53 have already been published by the Institue.

The present compendium is the second in the series covering the period 1954-59. As in the earlier compendium, the present series also contains critical summaries of results of experiments bearing on important agronomic factors, such as the response of crops to fertilizers and manures, inter-relationship of fertilizers, varieties and cultivation practices and other information of value for giving sound advice to farmers in different regions. Judging from the demand for the first series of the compendium, I am sure that the present series will also prove equally useful.

A Standing Committee consisting of the Agricultural Commissioner with the Government of India, the Director, Indian Agricultural Research Institute, and the Statistical Adviser, Indian Council of Agricultural Research, has been set up to provide general guidance to the work under this scheme. I congratulate the members of this Committee and, in particular, the Statistical Adviser and his associates at the Institute of Agricultural Research Statistics for bringing out this compendium. The preparation of this compendium has been made possible only by the wholehearted co-operation of the States and other organisations in making available the results of their experimental researches for this purpose. My thanks are due to the officers of the State Departments of Agriculture and other institutions for participating in this work. I hope that the present series will be followed by periodical publications of similar compendia for later years, in order that the availability, in a consolidated form, of results of scientific experiments in agriculture in India may be maintained up-to-date.

A. D. Pandit
Vice-President,
Indian Council of Agricultural Research.

New Delhi,
March 26, 1965.

PREFACE

The present set of volumes form Part II in the series of compendia of Agricultural Field Experiments being published by the Indian Council of Agricultural Research under the project for National Index of Field Experiments and contains a unified record of experiments conducted at agricultural research stations and institutes all over the country. Volumes in Part I in this series were published in 1962 and contained results of some 7,500 experiments conducted during the period 1948-53. The present set of volumes includes results of experiments conducted during the next period that is 1954-59. After the period, covered by Part I of the series, agricultural research and experimentation has expanded so much that for the period 1954-59, to which the present volumes refer, results of more than 15,000 experiments are available.

The present compendium is prepared on the same pattern as the previous one and is divided into 15 volumes one each for (1) Andhra Pradesh, (2) Assam, Manipur and Tripura, (3) Bihar, (4) Gujarat, (5) Kerala, (6) Madhya Pradesh, (7) Madras, (8) Maharashtra, (9) Mysore, (10) Orissa, (11) Punjab, Jammu and Kashmir and Himachal Pradesh, (12) Rajasthan, (13) Uttar Pradesh (14) West Bengal and (15) All Central Institutes. In each volume, background information of the respective state regarding its division into different soils and agro-climatic regions, rainfall and cropping pattern followed in each region and agricultural production and area under different crops in the state is given. The experiments reported in each volume have been arranged crop-wise for each state. All the experiments belonging to a particular crop at various research stations are grouped together. For a particular crop, experiments are arranged according to the following classification :

Manurial (M), Cultural (C), Irrigational (I), Diseases, pests and chemicals other than fertilizers (D), Rotational (R), Mixed cropping (X) and combinations of these wherever they occur (*e.g.* CM as Cultural-cum-Manurial). Experiments in which crop varieties also form a factor are denoted by adding V to their symbol and are grouped together (*e.g.* MV as Manurial-cum-Varietal).

This publication owes its origin to the guidance and help of Dr. D.J. Finney, F.R.S., Professor of Statistics, Aberdeen University, Scotland, in formulating the project during his stay at the Institute of Agricultural Research Statistics as an F.A.O. expert in 1952-53.

At the Institute of Agricultural Research Statistics the work under the scheme was carried out under the supervision of Shri. T.P. Abraham, Assistant Statistical Adviser. The actual working of the scheme was conducted by Shri G.A. Kulkarni, Statistician till he left the Institute in July, 1964. The work was subsequently taken over by Shri O.P. Kathuria, Assistant Statistician. Messrs. L.B.S. Somayazulu, P.P. Rao, M.L. Sahni, Harbhajan Singh, A.L. Punhani, M.K. Joshi, N.K. Worrier, H.C. Jain and J.K. Kapoor of the statistical staff of the Institute deserve special mention for careful and painstaking work in editing and scrutiny of the manuscript as well as proofs of the compendium.

The burden of collecting the data from the various research stations and the analysis of a large number of experiments once again fell on the regional staff of the Council placed in different States. They deserve to be congratulated for the hard work they have put in.

Thanks are due to the State Departments of Agriculture, the Central Institutes and the Commodity Committees who made the data of the experiments conducted under their jurisdiction readily available to the staff of the Institute. The present publication has become possible only through their unstinted co-operation. The Institute is also thankful to the various officers in the States who worked as Regional Supervisors for the project from time to time and took keen interest in the working of the Scheme. The list of the names of the regional supervisors and the regional staff of the project is given on the following page.

V.G. Panse
Statistical Adviser,
Institute of Agricultural Research Statistics (I.C.A.R.).

New Delhi,
March 25, 1965.

REGIONAL SUPERVISORS AND REGIONAL STAFF FOR THE NATIONAL INDEX OF FIELD EXPERIMENTS

Region and Headquarter	*Statistical staff from the Institute of Agricultural Research Statistics.*	*Regional Supervisors*
1. Andhra Pradesh (Hyderabad)	S.K. Jilani P.R. Yeri	Dr. Mohd. Quadiruddin khan, Joint Director of Agricultural. Late Dr. Syed Waheeduddin. Shri Md. Khasim Adoni, Joint Director of Extension. Shri N.V. Mohana Rao, Joint Director, Agricultural Research Institute, Rajendranagar. Shri L. Venkataratnam, Deputy Director of Agriculture (Research).
2. Maharashtra (Poona)	P.D. Mehta B. Ramakrishnan	Shri D.S. Rangarao, Statistician, Department of Agriculture.
3. Gujarat (Ahmedabad)	S.P. Doshi	Dr. D. K. Desai, Deputy Director of Agriculture (Statistics). Shri J.B. Trivedi, Deputy Director of Agriculture (Statistics).
4. Uttar Pradesh (Lucknow)	S.N. Bajpai M.P. Saxena G.N. Bahuguna A.C. Srivastava	Dr. K. Kishen, Joint Director of Agriculture (Statistics).
5. Madhya Pradesh	T. Lokeswara Rao H.C. Gupta	Shri A.G. Khare, Statistician, Department of Agriculture.
6. Punjab, Jammu & Kashmir & Himachal Pradesh (Chandigarh)	A.C. Kaistha B.L. Kaistha M.S. Batra	Shri Piara Singh Sahota, Director of Crop Insurance. Shri Mohinder Singh Pannu, Statistician, Department of Agriculture.
7. Bihar (Sabour)	M.K. Joshi P.C. Kholia	Shri G.P. Singh, Statistician, Department of Agriculture. Shri R.S. Roy, Principal, Agricultural Research Institute, Sabour.
8. Rajasthan (Jaipur)	B.P. Dyundi N.K. Ohri	Shri H.C. Kothari, Statistician, Department of Agriculture,
9. Orissa (Bhubaneswar)	L.B.S. Somayazulu	Shri B. Misra, Deputy Director of Agriculture (Hq.) Shri D. Misra, Principal, Uttakal Krushi Mahavidyalaya, Bhubaneswar.
10. West Bengal (Calutta)	S.N. Nath	Shri S.N. Mukerjee, Statistical Officer, Directorate of Agriculture.

11. Madras (Coimbatore)	P. Prabhakara Rao V. Venkateswara Rao	Late Shri M. Bhavani Sankar Rao, Vice-Principal and Secretary, Research Council, Agricultural College and Research Institute, Coimbatore. Shri T. Natarajan, Agronomist. Shri A.H. Sarma, Extension Specialist. Shri V. Raman, Secretary, Research Council. Shri K.R. Nagaraja Rao, Secretary, Research Council.
12. Assam	T.K. Gupta	Dr. S.R. Barooha, Director of Agriculture, Assam. Shri B.N. Duara, Joint Director of Agriculture, Assam.
13. Mysore (Bangalore)	K.A. Balakrishnan	Shri M.A. Wali, Director of Statistics, Shri B.V.S. Rao, Assistant Director of Statistics.
14. Kerala (Trivandrum)	V.N. Iyer	Shri M. Janardanan nair, Director of Agriculture. Shri N. Shankara Menon Director of Agriculture. Shri P.D. Nair, Director of Agriculture.

ABBREVIATIONS COMMON TO EXPERIMENTS ON ANNUAL AND PERENNIAL CROPS AND EXPERIMENTS ON CULTIVATORS' FIELDS.

Crops :- In the top left corner is given the name of the crop on which the experiment is conducted. Within brackets along side the crop is mentioned the season wherever the information is available.

Ref :- Against the sub-title 'reference' is mentioned the name of the State, the year in which the experiment is conducted and the serial number of the experiment for that year given in brackets.

Abbreviations adopted for States are as follows :—

1. A.P.—Andhra Pradesh
2. As.—Assam
3. Bh.—Bihar
4. Gj.—Gujarat
5. H.P.—Himachal Pradesh
6. J.K.—Jammu and Kashmir
7. K.—Kerala
8. M.P.—Madhya Pradesh
9. M.—Madras
10. Mh.—Maharashtra
11. Ms.—Mysore
12. Or.—Orissa
13. Pb.—Punjab
14. Rj.—Rajasthan
15. U.P.—Uttar Pradesh
16. W.B.—West Bangal

For the experiments conducted under the schemes sponsored by the Indian Concil of Agricultural Research like the Model Agronomic Experiments or the Simple Fertilizer Trials scheme no serial numbers have been given at the source as the data of these experiments were collected at the Headquarters (New Delhi). In such cases the abbreviations MAE, SFT or TCM are given in the brackets against the year in which the experiment is conducted.

Site :—Name of the Research Station is mentioned alongwith the place where it is located, e.g. Agri. Res. Stn. for Agricultural Research Station.

For Central Institutes, the corresponding standard abbreviations have been adopted e.g. I.A.R.I. for the Indian Agricultural Research Institute.

In case of the experiments conducted on cultivators' fields whether under an Indian Council of Agricultural Research scheme or by the State Government, the abbreviation (c.f.) is given along with the site or centre as, for example, Cuttack (c.f.).

Type :- Abbreviations used against this item are one or more than one of the following :—

C—Cultural ; D—Control of Diseases and Pests ; I—Irrigational ; M—Manurial ; R—Rotational ; V—Varietal and X—Mixed cropping. e.g. CM is to be read as Cultural-cum-manurial.

Object :- A statement of the objective of the experiment is given indicating the main crop and type of the experiment. In case of M.A.E., S.F.T. and T.C.M. experiments, the type to which the experiment corresponds is also given, e.g. Type V, Type A or B or C etc.

Results :- Information under this heading should be read against the following items :—

(i) General mean. (ii) S.E. per plot. (iii) Results of test of significance. (iv) Summary table(s) with S.E. of comparison(s).

Other abbreviations used in the text of experiments :

Nitro. Phos.—Nitrogen Phosphate
Ammo. Phos.—Ammonium Phosphate
A/S—Ammonium Sulphate
A/S/N.—Ammonium Sulphate Nitrate
C/A/N—Calcium Ammonium Nitrate
A/N—Ammonium Nitrate
A/C—Ammonium Chloride
C/N—Chilean Nitrate
N—Nitrogen
P—Phosphate

K—Potash
B.M.—Bone meal
Mur. Pot.—Muriate of Potash
Pot. Sul.—Potassium Sulphate
Super—Super Phosphate
Zn. Sul.—Zinc Sulphate
C/S—Copper Sulphate
G.M.—Green Manure
F.Y.M.—Farm Yard Manure
F.W.C.—Farm Waste Compost
F.M.—Fish Manure
G.N.C.—Groundnut cake
M.C.—Municipal Compost
T.C.—Town Compost
lb.—Pounds
Srs.—Seers
B.D.—Basal dressing
C.L.—Cart load
ac.—Acre
Dical. Phos.—Dicalcium Phosphate

Under the item (ii) (b) of the sub-heading 'Basal conditions' in the text of the experiment, the respective farm/station at which the experiment was conducted has been referred to for the soil analysis. The soil analysis of the farm, with other details of the research station is given under the background information of each state. The information regarding the details of experimental stations may be obtained under the respective items as given below :

DETAILS OF EXPERIMENTAL STATIONS

A. General information :

(i) District and the nearest railway station with Latitude, Longitude and Altitude if available. General topography of the experimental area. (ii) Type of tract it represents. (iii) Year of establishment. (iv) Cropping pattern. (v) Programme of research.

B. Normal rainfall :

Average monthly rainfall specifying the period on which the figures are based.

C. Irrigation and drainage facilities :

(i) (a) Whether available, if so, since when. (b) Type of facilities available. (ii) Whether there is a proper drainage system.

D. Soil type and soil analysis :

(i) Broad soil type with depth, colour. and structure etc. (ii) Chemical analysis. (iii) Mechanical analysis.

E. No. of experiments :

No. of experiments conducted on different crops that have been included in the compendium.

Information under the following heads is to be read against the respective items as given below.

BASAL CONDITIONS

A. For experiments on annual crops :

(i) (a) Crop rotation if any. (b) Previous crop. (c) Manuring of previous crop. (State amount and kind). (ii) (a) Soil type. (b) Soil analysis. (iii) Date of sowing/planting. (iv) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing/planting. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring with time and method of application. (vi) Variety. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season (x) Date of harvest.

B. For experiments on perennial crops :

(i) History of site including manuring and other operations. (ii) (a) Soil type. (b) Soil analysis. (iii) Method of propagation of plants. (iv) Variety. (v) Date and method of sowing/planting, (vi) Age of seedlings at the time of planting. (vii) Basal dressing with time and method of application. (viii) Cultural operations during the year. (ix) Inter cropping if any. (x) Irrigated or Unirrigated. (xi) Rainfall during crop season. (xii) Date of harvest.

C. For experiments on cultivators' fields :

(i) (a) Crop rotation, if any. (b) Previous crop. (c) Manuring of previous crop. (ii) Soil type in general. (iii) Basal manuring with time and method of application. (iv) Variety. (v) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (vi) Period of sowing/planting. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season. (x) Period of harvesting.

DESIGN

A. For experiments on annual crops :

(i) Abbreviations for design : C.R.D.—Completely Randomised Design. R.B.D.—Randomised Block Design , L. Sq.—Latin Square , Confd.—Confounded , Fact.—Factorial. (other designs and modifications of the above to be indicated in full.). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) Plot size. (a) Gross. (b) Net. (v) Border or guard rows kept. (vi) Whether treatments are randomised (separately in each block).

B. For experiments on perennial crops :

(i) Abbreviations for designs : C.R.D.—Completely Randomised Design ; R.B.D.—Randomised Block Design ; L.Sq.—Latin Square ; Confd.—Confounded. (other designs and modifications of the above indicated in full). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) No. of trees/plot. . (v) Border or guard rows kept. (vi) Are treatments randomised.

C. For experiments on cultivators' fields :

(i) Method of selection of experimental sites. (ii) No. and distribution of experiments. (iii) Plot size. (a) Gross. (b) Net. (iv) Whether treatments are randomised.

GENERAL

A. For experiments on annual crops :

(i) Crop conditions during growth with date of lodging, if any. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places (a) names of the places along with reference and (b) reference to combined analysis, if any. (vi) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vii) Any other important information.

B. For experiments on perennial crops :

(i) Crop condition during the year. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) reference to combined analysis, if any. (v) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vi) Any other important information.

C. For experiments on cultivators' fields :

(i) Crop condition during growth. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years, (a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places names of places alongwith reference. (vi) Abnormal occurrances, like heavy rains, frost, storm etc., if any. (vii) Any other important information.

TABLE OF CONVERSIONS TO METRIC UNITS

1 foot = 304.8 mm.
1 acre = 0.404606 hectare.
1 gram = 0.035274 ounce = 0.085735 tola = 0.017147 chatak
1 kg. = 2.20462 pounds = 1.07169 seers.
1 metric tone = 0.9842 ton = 26.7923 maunds.
1 maund = 0.373242 quintal = 37.3242 kg.
1 lb./ac. = 1.12085 kg./hectare.
1 md./ac. = 92.23002 kg./hectare = 0.9223 quintal/hectare.
1 ton/ac. = 2.51071 metric tones/hectare.
1 gallon (Imp.) = 4.54596 litres.

GLOSSARY OF VERNACULAR NAMES OF CROPS

Sl. No.	Name of Crop	Botanical Name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
1.	Paddy	*Oryza sativa L.*	Dhan	Dhan	Dhano	Vadlu ; Biyyamu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan ; Chawal	Chaul ; Dhan
2.	Wheat	*Triticum sativum* Lamk *Triticum aestivum L.*	Gaum ; Ghehu	Gam	Gaham	Godhumalu	Kothumai	Gothambu	Godhi	Gahu	Ghahu	Gehon	Kanak
3.	Sorghum (Great millet)	*Andropogon sorghum* Brot. *Sorghum vulgare* Pers.	——	Jowar	Juara	Jonna	Cholam	Cholam	Jola	Jowari; Jondhla	Jowari; Juar	Jowar ; Juar	Jowar
4.	*Bajra* (Peral millet)	*Pennisetum typhoideum L.* stapf Ex hubbard	——	Bajra	Bajra	Sajja	Kambu	Kambu	Sajje	Bajri	Bajri	Bajra	Bajra
5.	*Nagli* (Finger millet)	*Eleusine coracana* Gaertn.	——	Marwa	Mandia	Ragi ; Chodi	Keppai ; Ragi ; Kelvaragu	Muthari; Ragi	Ragi	Nagli; Nachni	Nagli; Bavto	Ragi ; Mandika; Marwah	Mandhuka ; Mandhal
6.	Banti	*Echinochloa crusgalli* Beauv. *Echinochloa stagnina* Beauv.	——	Dal	Not known	——	——	——	Gandu Bhatta hullu	Banti	Banti	——	——
7.	*Chinamug* (Green gram)	*Phaseolus aureus* Roxb.	Magumah	Sonamug	Mung	Pachapesalu	Pachaipayaru Pasipayaru	Cerupayaru Payau	Hesaru	Mug ; Chinamug	Mag	Moong	Moong, Mug
8.	Gram ; Bengal gram	*Cicer arietinum L.*	Butmah	Chola	Boot	Sanagalu	Kadalai, Sundal *Kadalai*	Kadala	Kadale	Harbara	Chana	Chana	Chhole ; Chana
9.	Sugarcane	*Saccharum officinarum L.*	Kuhiar	Akh	——	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna ; Kamad ; Naishakar	Kamad ; Ganna ; Eakh
10.	Cotton	*Gossypium* spp.	Kapah	Karpas; Tula	Kapa	Pratti	Proti	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
11.	Groundnut	*Arachis hypogaea L.*	China Badam	Cheena badam	China badam	Nelasa-anga	Nilakadalai	Nilakkadala	Kadale kayi	Bhuimug	Magafali	Mungphali	Mungfali
12.	*Lang* (Chickling vetch)	*Lathyrus sativus L.*	Khesari	Khesari	Khesari	Kesari Pappu	Kaesari Paruppu	——	Chikkathogari	Lakh	Lang	Chattri Mathri	——
13.	Garlic	*Allium sativum L.*	Nohoyu	Rashun	Rasun	Vellulli	Poodu; Velal Poodu	Veluthulli	Bellulli	Lasun	Lasan	Lehsoon	Thom ; Lassan
14.	Tobacco	*Nicotiana tabacum L.*	Dhopat	Tamak	Uanpatra	Pogaku	Pugayilai	Pukayila	Hoge Soppu	Tambaku	Tamaku	Tambaku	Tamaku ; Tambaku
15.	Lucerne	*Medicago sativa* L.	Lucerne-ghah	Lusern	Lusarna	Garam Masal	Kuthirai-masal	Lucerne	Kudure Masale	Lasun ghas; Vilaitighavat	Gadab Rajko	——	Lucan
16.	*Chiku* (Sapota)	*Achras Sapota* L.	Sopata	Sobeta	Sopeta	Sapota	Sapota; Seemai elluapi	Sapota	Sapota hannu	Chiku	Chiku	Cheeku	Sitalphal

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GUJARAT

The State of Gujarat lies along the western coast of India and is bounded by Rajasthan and West Pakistan on the north, Madhya Pradesh on the east, Maharashtra on the south and Arabian sea on the west. Administratively the state has been divided into 18 districts. The state has an area of 71056 sq. miles or 45.5 million acres. Area according to village papers is 45.3 million acres. The statistics on the land utilization in this state are given in the Table 1 below :

TABLE 1

(Figures in '000 acres)

Total geographical area as per village papers	45259
Forest	2743
Barren and unculturable land	11423
Land put to non-agricultural uses	1234
Culturable waste	1797
Permanent pastures and other grazing land	2551
Land under misc. tree crops	111
Current fallows	907
Other fallow land	861
Net area sown	23632
Area sown more than once	1393
Total cropped area	25025

1. *Agro-climatic Regions*

The climate of Gujarat in the south and south-west is mostly moist with an average rain fall of about 1500 mm. while the north-eastern portion is dry approaching that of southern Rajasthan with a rain fall of about 500 mm. The temparatures are also higher in the northern area and lowest in the southern districts. The maximum temperature varies from 36.7°C to 43.3°C during summer. During winter, November to February minimum temparature varies from 2°C to 18.3°C and maximum from 21.1°C to 37.8°C. Rainy season in the southern portion lasts from July to October and is hot and moist. The soils of Gujarat State are mostly of black type varying from shallow to deep black, sandy loam (*Gorat* or *Goradu*) and of coastal alluvium. The last two types of soils are observed along the coastal area and also in the northern portion comprising river alluvia. The soils in many parts of the state are of black type. From the point of view of soil type and climatic conditions prevailing in the State, Gujarat can be divided into 5 distinct agro-climatic regions which are briefly described below :—

1. **Southern Region :**—This region comprises the area south of the river Narmada and covers the districts of Broach, Surat, Bulsar and the Dangs. The soils in most of Broach and Surat districts are deep black cotton from the trap and vary from clay to clay-loam in nature. A strip of coastal alluvium about 10 to 15 miles wide is also found along the coast of Surat and Broach districts. Most of the Dangs district is covered by the hilly areas. The rainfall varies from 1016 to 1524 mm.

2. **Middle Region :**—The area lying between the rivers Sabarmati and Narmada forms the middle region and constitutes the districts of Baroda, Panch Mahals, Sabarkantha, Kaira, parts of Broach district north of river Narmada and parts of Ahmedabad district lying east of river Sabarmati. The soils in this region are mostly sandy to sandy loam and in the valleys of Panch Mahals district the soils are dark coloured loam fairly deep and fertile locally known as *besar*.

3. **Northern Region :**—The area lying west of the river Sabarmati and comprising the districts of Ahmedabad, Banaskantha and Mehsana constitutes the northern region. The

soils vary from sandy to sandy loam locally known as *gorat* or *gorudu*. The alluvial *gorudu* soil of the Indo-Gangetic type found in Ahmedabad district is very deep, grey to light brown in colour. These soils respond well to irrigation and manuring. The rainfall in the region varies from 281 to 762 mm. There is wide variation in temperature ranging from 4.4°C to 46.1°C.

4. **Saurashtra Region** :—This region comprises of Surendra Nagar, Rajkot, Jamnagar, Junagadh, Amreli and Bharnagar districts. The rainfall varies from 457 to 889 mm. The soils are mostly medium black and shallow light except in Junagadh area.

5. **Kutch Region** ;—The soils of Kutch are of sandy loam type. The rainfall varies from 254 to 457 mm.

2. *Irrigation*

The State has nearly 1.85 million acres irrigated. The area irrigated by different sources is given in the Table 2 below :

TABLE 2

Source	Area in '000 acres	%
Government canals	229	12.3
Private canals	32	1.7
Tanks	44	2.4
Wells	1459	78.7
Other sources	90	4.9
Net area irrigated	1854	100.0
Area irrigated more than once	96	

3. *Agricultural Production and Normal Cropping Pattern*

Bajra, paddy, jowar, wheat, cotton and groundnut are the , principal crops of the State. Paddy, cotton and jowar are the major crops of the Southern Region. In addition to the above crops, bajra, tobacco and groundnut are also grown in the districts comprising the Middle Region. The major crops of the Northern Region and the Saurashtra and Kutch Regions are bajra, jowar, cotton and groundnut. Wheat is also grown extensively in the Northern and the Saurashtra regions. The area production and the average yield per acre of principal crops of the state are given in the Table 3 below :

TABLE 3

Area, production and yield per acre of principal crops (figures 1963—64)

Crop	Area in '000 acres	Production in '000 tons	Yield in lb./acre
Rice	1284	477	832
Wheat	1028	361	786
Jowar	3324	402	271
Bajra	2951	640	486
Maize	551	236	957
Other cereals	333	116	980
Gram	252	54	480
Tur	207	45	492
Other Pulses	870	96	247
Sugarcane	55	1318	23.96*
Groundnut	4560	1251	614
Castor	162	19	263
Sesamum	253	21	187
Cotton	4169	1316**	124
Tobacco	188	69	825

* In tons

** Cotton lint in bales of 392 lb. each.

5. *Agricultural Experimentation*

Agricultural experimentation in Gujarat State increased considerably during the period 1954-59 as compared to the preceding five years. There are now 31 agricultural research farms reporting experiments on different agronomic aspects as compared to 17 during the period 1948-53. The research stations at Amreli, Halvad, Junagadh, Surat and Umrala are the principal agricultural research stations in the State accounting for more than 50 percent of the total number of experiments reported for this period. There were in all 631 experiments reported for the period 1954-59 conducted in the State. The distribution of these experiments according to crops and types of treatments tried is given in the Table 4 below :

TABLE 4

Distribution of experiments crop and type-wise

Crop	M	MV	C	CV	CM	CMV	I+IM+IV	IC+ICM	D+DM	Total
Paddy	24	1	11	1	20	—	—	—	—	57
Wheat	50	3	41	1	6	9	9	3	1	123
Jowar	25	3	15	—	19	—	—	—	2	64
Bajra	29	1	22	—	21	—	1	—	—	74
Nagli	3	—	—	—	11	—	—	—	—	14
Banti	2	—	—	—	—	—	—	—	—	2
Chinamug	8	—	—	—	—	—	—	—	—	8
Gram	11	2	3	—	3	—	2	2	—	23
Legume	5	—	—	—	—	—	—	—	—	5
Sugarcane	9	—	—	1	8	—	—	—	—	18
Cotton	33	—	12	1	25	—	10	2	4	87
Groundnut	19	1	26	—	10	—	1	—	2	59
Lang	1	—	—	—	—	—	—	—	—	
Garlic	1	—	1	—	—	—	—	—	—	2
Tobacco	6	—	—	—	—	—	—	—	—	6
Jowar fodder	5	—	5	—	—	—	—	—	—	10
Lucerne	5	—	2	—	1	—	—	—	—	8
Grasses	—	3	—	—	—	—	—	—	—	3
Chiku	—	—	—	—	6	—	—	—	—	6
R	—	—	—	—	—	—	—	—	—	28
X	—	—	—	—	—	—	—	—	—	33
Total	236	14	138	4	130	9	23	7	9	631

Besides, about 60 experiments conducted in the State under the Schemes of Model Agronomic Experiments and Simple Fertilizer Trials of the Indian Concil of Agricultural Research and the experiments conducted on cultivators' fields are also included in the compendium.

It can be seen from the above table that maximum number of experiments among cereals were conducted on Wheat (about 20%) crop although from the acreage point of view Wheat comes after Bajra, Jowar, and Paddy in the State. Experiments on these crops account for 11.7, 10 and 9.5 percent of the total respectively.

Among cash crops, cotton accounts for the largest number of experiments, about 13.8 percent of the experiments being conducted on this crop. Groundnut is the major oilseed crop of the State accounting for about 9.5 percent of the total number of experiments.

Nearly 37 percent of the experiments conducted are purely manurial and 22 percent purely cultural. Experiments involving application of manures as part of treatments account for about 62 percent of the total number of experiments.

About 70.4% of the experiments were laid out in randomised blocks with one or more factors constituting the treatments. About 20.4% of the experiments were laid out in split-plots. Experiments with confounding arrangement of factors in randomised block or split-plot designs accounted for the remaining 9.2% of the experiments.

The number of plots per block in randomised block designs varied from 2 to 36. In split-plot design the no. of main-plots per replication varied from 2 to 27 and no. of sub-plots per-main-plot varied from 2 to 12. The no. of replications in general varied from 1 to 12. The size of net plot in case of R.B.D. ranged from 1/120th of an acre to 1/15th of an acre while in the split-plot designs, the net plot size ranged between 1/400th of an acre to 1/100th of an acre.

PARTICULARS OF RESEARCH STATIONS AND SOIL ANALYSIS

1. Agricultural Research Station, Amreli.

A. General information **:**

(i) District Amreli, one mile from Amreli R.S. (ii) It represents plain tract with levelled plots. (iii) Started in 1926. (iv) Millets - Cotton - Groundnut is the cropping pattern. Wherever irrigation facilities are available, irrigated wheat is taken in *Rabi* after *Kharif* groundnut. (v) Plant breeding, agronomic and other cultural trials on main crops of the tract are the main aspects of research.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
250	486	346	354	79	24	2	1	1	4	9	7	1564

(Av. based on rainfall data for 1953-63 period)

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1926. (b) Two working wells one operated by oil-engine and the other with motor. (ii) Proper drainage is available.

D. Soil type and Soil Analysis :

(i) Medium black soil, shallow 2′—3″ deep. (ii) Chemical analysis and (iii) Mechanical analysis as below :

(ii) Chemical analysis (based on samples of soil)

Description	1	2	3	4
	Percent on original samples			
Stones	6.22	6.86	6.75	5.44
	Percent on air dry fine sample			
Moisture	8.44	10.04	9.42	8.54
Loss on ignition. (excluding moisture).	6.28	7.24	8.74	5.74
Calcium Carbonate ($CaCO_3$).	5.80	5.00	5.60	4.80
Nitrogen	0.08	0.09	0.08	0.07
	Percent on air dry fine sample			
(iii) Mechanical analysis				
Coarse sand	10.94	17.76	13.24	10.92
Fine sand (by diff.)	15.46	27.12	29.56	23.20
Silt	24.80	32.72	36.20	31.06
Clay	40.80	22.40	21.00	34.40
	Mam/100 gms. of dry fine matter.			
Available phosphoric acid (P_2O_5)	12.00	24.60	23.80	18.00
Available potash (K_2O)	11.00	20.00	22.00	8.00
pH value	8.30	8.50	8.50	8.60

Water analysis report
Parts per 100,000 parts of water.

Description	Well Water 'A'	Well Water 'B'
Sol. salts.	67.60	78.20
Sodium carbonate (Na_2CO_3)	3.45	3.45
Calcium carbonate ($CaCO_3$)	26.63	32.57
Magnesium carbonate ($MgCO_3$)	6.58	7.33
Magnesium Sulphate ($MgSO_4$)	12.50	12.05
Magnesium chloride ($MgCl_2$)	...	2.08
Sodium chloride (NaCl)	17.23	16.12
pH value	8.75	8.80

E. No. of experiments

Paddy—1, Wheat—10, Bajra—12, Cotton—12, Groundnut—10 and R+X—7. Total=52.

2. Institute of Agriculture, Anand.

A. General information :

(i) District Kaira, 3 miles from Anand R.S. Levelled area with few slopy plots. (ii) It represents charotar tract of Kaira district. (iii) Started in 1939. (iv) Generally Tobacco, *Bajri*, *Jowar*, Wheat, Hybrid Maize, Vegetables etc. is the cropping pattern. (v) Investigations into the improvement and production of common field crops of Gujarat State, are the main aspects of research.

B. Av. rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov. to May	Total
99.3	355	144	224	20	Nil	843

(Av. based on rainfall data for 1957-1962).

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1947. (b) Type of facilities N.A. (ii) Open drains are provided for removing excess rain water.

D. Soil type and soil analysis :

(i) Broad soil type is sandy loam (*goru*). Deep soil, yellewish brown in colour and massive in structure. (ii) Chemical analysis. and (iii) Mechanical analysis see appendix—I.

E. No. of experiments

Wheat—2, Tobacco—3, Fodder—2 Total=7.

3. Agricultural Research Station, Arnej.

A. General information:

(i) (a) District Arnej, one furlong from Arnej R.S. The station is situated more or less in the centre of *Bhal* tract of 2 lakhs of acres of dry wheat in Ahmedabad district. (ii) Black clayey soil heavily cracking in summer, depth of soil varies from 2½′ to 5′. (iii) Started in 1944. (iv) Wheat after wheat. (v) Programme of Research : experimentation on wheat.

B. Av. rainfall in mm:

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
231.1	617.2	350.5	404.3	88.9	17.8	—	10.2	45.7	—	—	30.5	1826.3

(Av. based on rainfall data for the period of 3 years).

C. Irrigation and drainage facilities :

(i) (a) Facilities available. (b) Type of facilities—N.A. (ii) There is no proper drainage system.

D. Soil type and soil analysis.

(i) Medium black to deep black soil to a depth of 2½′ to 5′ and clayey in structures.

(ii) Chemical analysis :

Depth	Total salts	$CaCo_3$	pH	Exchangeable basis		
				Ca	Mg	Na
0.9″	0.29	10.0	8.55	25.00	2.50	3.0
9″—18″	0.36	10.4	87.5	22.00	8.50	2.50

(iii) Mechanical analysis :

Depth	Silt	Clay
0—9″	28.25	38.00
9″—18″	16.00	40.00

E. No. of experiments :

Wheat—12, Gram—7, R+X—3, Total=22.

4. Agricultural Research Station, Bhachau.

A. General information :

(i) District Kutch, one furlong from Bhachau. R.S. Well levelled, well drained and bunded soils. (ii) Sandy soil having scanty rainfall. (iii) Started in 1954. (iv) *Bajra, Jowar,* Groundnut, Cotton, Wheat is the cropping pattern. (v) Programme of Research is as directed by Agronomy plant breeding and soil science sub-committee.

B. Av. rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March to May	Total.
41.91	132.08	68.58	92.45	19.81	7.87	4.31	—	1.27	—	268.28

(Av. based on the monthly data for 8 years).

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1954. (b) Oil-engines. (ii) Proper drainage is available.

D. Soil type and soil Analysis :

(i) Sandy alluvial soils having varying depth, white colour and loose structure.

(ii) Chemical analysis.

Percentage of air dry matter

Coarse matter	1.66	Lime (CaO)	0.65
Moisture	2.45	Nitrogen (N_2)	0.05
Loss on ignition	0.14	Phosphate (P_2O_5)	Traces.
Water Soluble Salts	—	Potash (K_2O)	—
Acid insoluble matter	92.55	Magnesium	0.14
Fe and Al oxide	2.40	pH Value	7.25

(iii) Mechanical analysis—N.A.

E. No. of experiments :

Wheat—2, Jowar—1, Total=3.

5. Trial-cum-Demonstration Farm, Bardoli.

A. General information :

(i) District Surat, 2 furlongs from Bardoli R.S. situated at 112′ above M.S.L. Land is not so levelled. (ii) Black cotton type soil. (iii) Started in 1957. (iv) Cotton, *Jowar,* Paddy, Wheat, Vegetables, Sugarcane and Mango is the cropping pattern. (v) Research programme is experimentation on cotton, *jowar,* wheat, paddy and other crops and studying the possibilities of growing the crops in tuber and vegetable crops.

B. *Av. rainfall in mm.*

June	July	Aug.	Sept.	Oct.	Nov. to May	Table
174	603	393	583	67	Nil	1819

(Av. based on rainfall data for 1954—62 period).

C. *Irrigation and drainage facilities.*

(i) (a) Facilities available since 1958. (b) Canal irrigation. (ii) There is no proper drainage.

D. *Soil type and soil analysis* :

(i) Broad soil type N.A. 4′—5′ deep and black in colour. (ii) Chemical analysis : Moisture—2.63, $CaCO_3$—0.35, Organic matter—0.164, Soluble salts. 0.05, Organic Carbon—0.095, Total N—0.05, C/N Ratio—1 : 2, pH—7.5. (iii) Mechanical analysis—N.A.

E. *No. of experiments* :

Paddy—2, Sugarcane—1, Cotton—3, R+X—1, Total=7.

6. Agricultural Research Station, Bhuwa.

A. *General information* :

(i) District Broach, 18 K.M. from the Broach R.S. with well levelled land. (ii) Cotton tract of Broach. (iii) Started in 1948. (iv) Cotton after Lang is the cropping pattern. (v) Research programme is experimentation on jowar, cotton, tur, lang, gram, peas, wheat, groundnut etc.

B. *Av. rainfall in mm* :

June	July	Aug.	Sept.	Oct.	Nov.	Dec. to April	May	Total
29	10	100	74	26	2	—	10	344

C. *Irrigation and drainage facilities* :

(i) (a) Facilities are available since 1946. (b) Type of. facilities—N.A. (ii) Proper drainage is available.

D. *Soil type and soil analysis* :

(i) Board soil type—N.A. Black in colour. (ii) Chemical and (iii) Mechanical analysis —N.A.

E. *No. of experiments* :

Wheat—2, Jowar—9, Misc.—2, R+X—7, Total=20.

7. Central Research Station, Broach.

A. *General information* :

(i) District Broach, 1½ miles from Broach. The is uniform land without any slopes. (ii) Type of tract is middle Gujarat cotton tract. (iii) Started in 1913. (iv) Cotton after jowar is the cropping pattern. (v) Research programme is to evolve cotton varieties superior to *digvijay*.

B. *Av. rainfall in mm.*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. to May	Total
91	222	177	145	27	3	6	—	672

(Av. based on rainfall data for 60—63).

C. *Irrigation and drainage facilities* :

(i) (a) Facilities—N.A. (b) Type of facilities—N.A. (ii) Proper drainage is available.

D. *Soil type and soil analysis* :

(i) Broad soil type N.A. Deep soils with 3′ to 4′ depth, dark black in colour and clayey. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. No. of experiments :

R+X—6 Total=6.

8. Trial-cum-Demonstration Station, Chikhli.

A. General information

(i) District Surat, 6 miles from Bilimora R.S. with approximately levelled land (ii) Type of tract is deep black *kyari* area at south Gujarat for rainfed transplanted paddy. (iii) Started in 1959. (iv) Paddy, wheat, Paddy—maize etc. is the cropping pattern. (v) Programme of research is trials on cultivation practices under the concept of canal irrigation to access the Kakrapar projects.

B. Av. rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb. to May	Total
193	561	261	336	—	—	12	9	—	1371

(Av. based on rainfall data for June 1962 to May, 1963)

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1960. (b) Type of facilities—Canal irrigation. (ii) Proper drainage is available.

D. Soil type and soil analysis :

(i) Broad soil type N.A. Depth varying from 5′ to 7′ and even more. Colour is deep black with calcium aggregates. Structure is granular at vaspa and cloddy when dry. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. No. of experiments :

Paddy—3, Total=3.

9. Agricultural Research Station, Dabhoi.

A. General information :

(i) District Baroda, 2 miles from Dabhoi R.S. (ii) Black cotton soil and *Khari* land for paddy. (iii) Started in 1937. (iv) Cotton, jowar, paddy, wheat, paddy-gram etc. is the cropping pattern. (v) Research programme is to conduct agronomical experiments on paddy, wheat, jowar, gram and cotton.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov. to April.	May	Total
164.5	385.5	182.3	259.6	44.1	Nil	13.5	1049.6

(Av. based on rainfall data for 1959 to 61 period).

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1937. (b) Type of facilities—Tank. (ii) No proper drainage available.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. 4½′ to 5′ deep. Black to Besar (slightly brown) in colour. (ii) Chemical analysis : Moisture—2.11 N_2—0.04, P_2O_5—16.50 ; K_2O—19.88 ; $CaCO_3$—2.87 ; Total Sol. Salt—0.15 and pH—7.9. (iii) Mechanical analysis—N.A.

E. No. of experiments :

Paddy—8, Wheat—4, Jowar—2, R+X—3, Total=17.

10. Agricultural Research Station, Deesa.

A. General information :

(i) District Banaskantha (ii) Type of tract is Banskantha district tract (iii) Started in 1953. (iv) Bajra, *Makki* and *Guwar* etc. is the cropping pattern. (v) Research programme is field experimentation.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov. to Mar.	April	May	Total
0.50	145.54	42.16	109.22	67.31	—	1.77	—	366.50

C. Irrigation and drainage facilities :

(i) (a) Facilities—N.A. (b) Type of facilities—N.A. (ii) No proper drainage available.

D. Soil type and soil analysis :

(i) Sandy loam. Indefinite in depth, yellowish in colour and loose and driable. (ii) Chemical analysis : P—8.34, Total salts—0.04, $CaCO_3$,—0.74, Ca—2, Mg—3, $Na+K_2O$—1.1. (iii) Mechanical analysis : Silt—4.80, Clay—12.50.

E. No. of experiments :

Jowar—7, Bajra—10, Fodder—3, Total=20.

11. Agri. Res. Stn., Dohad.

A. General information :

(i) District Panchmahals, 2½ miles from Dohad R.S. (ii) Type of tract is hilly, rocky, gravelly and slopy. (iii) Started in 1907. (iv) Maize after dry wheat or gram after maize, Padddy—wheat—paddy is the cropping pattern. (v) Research programme : conducting different agronomic and plant breeding experiments.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb to May	Total
23.11	230.88	252.22	259.84	—	21.30	9.14	3.18	—	800.33

(Av. based on rainfall data for the period N.A.)

C. Irrigation and drainage facilities :

(i) (a) Facilities available. (b) One tank. (ii) No. proper drainage available.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. 1½′ to 2′ deep. Medium black to *gorudu* in colour. Gravelly in structure. (ii) Chemical analysis and (iii) Mechanical analysis is as below.

Chemical Analysis

Percentage of different constituents analysed for :

Depth in inches	0—4″	4—11″	11—21″	21—40″
Moisture	0.71	1.86	2.35	2.58
Loss on ignition (excluding moisture)	7.69	7.55	7.99	8.65
$CaCO_3$	trace	trace	trace	trace
Total K_2O	0.41	0.41	0.34	0.44
Total P_2O_5	0.127	0.130	0.117	0.068
Total N	0.070	0.062	0.034	0.034
Available K_2O	0.024	0.016	0.014	0.021
Available P_2O_5	0.058	0.044	0.023	0.009

(Mili equivalent percent)

Exchangeable Ca	14.00	17.00	18.50	21.50
Exchangeable Mg	2.00	3.00	4.00	2.00
Exchangeable Na	2.30	1.50	1.30	1.30
Exchangeable K	0.79	0.68	0.56	1.54
Total exchangeable bases, sum of the above	19.09	22.18	24.36	26.34
pH value	7.80	7.60	7.80	7.80

Mechanical analysis

Percent on air dry fine matter

Depth in inches	0—4″	4—11″	11—21″	21—40″
Moisture	1.71	1.86	2.36	2.58
Carbonates ($CaCO_3$)	—	—	—	—
Organic matter	5.98	5.67	5.54	6.07
Clay	30.75	25.75	23.00	33.25
Silt	17.00	21.50	18.50	21.50
Fine Sand (estimated by difference)	41.26	43.22	38.30	33.57
Coarse sand	3.30	2.00	2.30	3.03

E. No. of experiments :

Wheat—6, Nagli—3, Groundnut—1, R+X—2, Total=12.

12. Fruit Research Station, Gandevi.

A. General information :

(i) District Surat, 2 miles from Gandevi R.S. with uniform level land. (ii) Type of tract—Semi arid Humid region. (iii) Started in 1937. (iv) Perennial crop is the cropping pattern. (v) Research programme is experimentation on *chiku* and mango crops.

B. Av. rainfall in mm

June	July	Aug.	Sept.	Oct. to May	Total
115.8	568.8	187.8	448.0	—	1362.4

(Av. based on rainfall data for 1962-63 period)

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1942. (b) Type of facilities—Crossly Engine B.H.P. 12-13. (ii) No proper drainage available.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. 10′ deep. Black in colour. Sandy loam in structure. (ii) Chemical analysis and (iii) Mechanical analysis is as below.

Chemical analysis (percent)

N	Total P_2O_5	Total K_2O	Organic matter
0.57	0.095	0.304	0.057

Mechanical analysis (percent)

Coarse	Fine	Silt	Clay	$CaCO_3$	Sol. Salt
2.52	53.83	14.22	21.90	Nil	0.04

E. No. of experiments :

Fruit—6, Total=6.

13. Agricultural Research Farm, Halvad.

A. General information :

(i) District Surendranagar, 4 miles from Halvad R.S., most of the area is under medium black soil. (ii) Medium black soil. (iii) Started in 1954. (iv) Bajri—wheat—cotton, Groundnut—wheat—cotton, jowar—cotton is the cropping pattern. (v) Research programme is agronomic, breeding and irrigational experiments on various crops.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov.	Dec. to Jan.	Feb.	Mar.	April	May	Total
31.7	26.33	64.7	116.7	—	0.31	—	4.4	3.4	—	6.5	491.0

(Av. based on rainfall data for 1962-63 period)

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1954. (b) Canal irrigation. (ii) Proper drainage available.

D. Soil type and soil analysis :

(i) (a) Broad soil type—Medium black soil., 0 to 1 foot deep, light black colour. Platy in structure (ii) Chemical analysis—Quantity in %—N—0.03 ; P—5.22, K_2O—3.38 ; T.S.S.—0.08 and pH value 7.9. (iii) Mechanical analysis—N.A.

E. No. of experiments :

Paddy—8, Wheat—33, Jowar—4, Bajra—14, Gram—2, Cotton—21, Groundnut—10, Fodder—3, Misc.—4, R×X—1, Total=100.

14. Agricultural Research Station, Harij.

A. General information :

(i) (a) District Mehsana, 1½ miles from Harij R.S. (ii) Type of tract is sandy clay to clay loam. (iii) Started in 1940. (iv) Cotton, bajri, jowar, groundnut and wheat is the cropping pattern. (v) Research programme is to investigate the possibility of reducing salinity by deep ploughing.

B. Av. rainfall in mm :

June	July	Aug.	Sept.	Oct. to May	Total
—	33.2	56.0	32.0	—	121.2

C. Irrigation and drainage facilities :

(i) (a) Facilities depend upon monsoon. (b) Type of facilities—N.A. (ii) Proper drainage available.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. Deep, black in colour. Structure sound. (ii) Chemical analysis—It is sandy clay to clay loam in texture and being clayed in the lower depth. The soils are highly saltive. (iii) Mechanical analysis is given below :

Depth	Clay %	Salt %	pH	Total sol. salt %	$CaCO_3$
0—3″	71.75	27.50	8.38	0.274	7.85
3″—8″	8.00	19.25	8.84	0.384	2.72
8″—12″	22.25	3.00	8.65	0.258	2.74
12″—24″	29.30	11.75	8.86	0.762	5.49
24″—36″	28.75	4.00	8.58	1.107	2.93
36″—48″	35.00	4.50	8.08	1.52	4.31
48″—60″	30.75	0.075	8.78	2.32	5.29

E. No. af experiments :

Bajra—2, Fodder—4, Misc.—2, Total=8.

15. Dry Farming Research Station, Jam-khambhalia.

A. General inforamtion :

(i) (a) District Jamnagar, 2 miles from Jam-khambhalia R.S. Slightly even (ii) Type of tract— Greyish black with sand murum come after the depth of 1.5′. (iii) Started in 1957. (iv) Jowar, bajri, groundnut and cotton etc. is the cropping pattern. (v) Research programme is to conduct agronomic and manurial trials on different crops.

B. Av. rainfall in mm :

June	July	Aug.	Sept.	Oct. to May	Total
25.5	61.2	23.1	14.0	—	123.8

(Av. based on rainfall data for the period —N.A.)

C. Irrigation and drainage facilities :

(i) (a) Facilities are not available. (b) Type of facilities—N.A. (ii) Proper drainage—N.A.

D. *Soil type and soil analysis :*

(i) Broad soil type—N.A. 6″ to 1.5′ deep. Colour greyish black with sand. (ii) Chemical analysis and (iii) Meanical analysis—N.A.

E. *No. of experiments :*

Bajra—2, Cotton—2, Groundnut—3, Total=7.

16. Irrigation-cum-Demonstration Farm, Jamnagar.

A. *General information :*

(i) District Jamnagar, 3 miles from Jamnagar R.S. Flat, almost levelled. (ii) Type of tract—light to medium black soil. (iii) Started in 1952. (iv) Bajra, jowar, castor, groundnut, wheat is the cropping pattern. (v) Research programme is to conduct varietal trials on groundnut, jowar, cotton and agronomic and breeding trials.

B. *Av. rainfall in mm.*

June	July	Aug.	Sept.	Oct.	Nov. to May	Total
92.2	154.4	184.1	90.7	2.5	—	534.2

(Av. basad on rainfall data for 1960-61 to 1962-63 period).

C. *Irrigation and drainage facilities :*

(i) (a) Facilities available, since 1952. (b) Type of facilities—well irrigated. (ii) Proper drainage—N.A.

D. *Soil type and soil analysis :*

(i) Broad soil type—N.A. 2″ to 1½′ deep. Colour light to medium black particles of murum. Structure semi compact. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. *No. of experimentats :*

Paddy—1, Wheat—11, Jowar—1, Bajra—3, Cotton—2, Groundnut—2, Misc.—2, R+X—2, Total=24.

17. Central Experimental Station, Junagadh.

A. *General information :*

(i) District Junagadh, 5 miles from Junagadh R.S. Situated near the mountain Girnar Lime stones are observed belowthe ground level at a depth 1′ to 2′ at many places. (ii) Type of traetmedium black-soil with the depth 1′ to 1½′. The lime stone is absorded below the said layer. (iii) Started in 1950. (iv) Cotton, jowar, bajra, cotton—groundnut—wheat, groundnut—cotton, jowar—groundnut are the cropping pattern. (v) Research programme is to conduct experiment on Jowar, Bajra, Wheat, Rice, Cotton and Groundnut.

B. *Av. rainfall in mm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April.	May	total
50.0	161.5	77.7	29.2	1.0	6.3	2.5	1.3	2.5	—	—	8.6	340.6

(Av. based on rainfall data for 50 years).

C. *Irrigation and drainage facilities :*

(i) (a) Facilities available since 1955, but not satisfactory. (b) Type of facilities—Wells, reservior. (ii) Proper drainage—N.A.

D. *Soil type and soil analysis :*

(i) Broad soil type—N.A. 1′ to 1⅓′ deep. Colour : medium black. Structure : grumpy. (ii) Chemical analysis and (iii) Mechanical analysis is as below.

(ii) Chemical analysis :
% air dry soil

Moisture	7.622
Lime reserve	1.86
Organic matter	3.173
Water soluable salts	0.127
Organic corbon	1.84

(iii) Mechanical Analysis :

pH	7.95
Conductrity	0.33
Available K	12.50—m.e. 100 gm over dry soil
Available P	17.42—m.e. 100 gm over dry soil
Total N	0.% air dry soil

E. No. of experimentats :

Paddy—9, Wheat—9, Jowar—2, Bajra—4, Cotton—6, Groundnut—18, Fodder—5, R+X—15, Total=68.

18. Trial-cum-Demonstration Farm, Kholwad.

A. General information :

(i) District Surat, 6 miles from Sayan R.S. Slightly slopy land. (ii) Type of tract—'D' region in Kakrapara project. (iii) Started in 1957. (iv) Jowar-cotton, Ground-nut-cotton, Wheat-paddy, is the cropping pattern. (v) Re-search programme is to change the present cropping pattern and to find out the manurial requirements and rotational practices, demonstration of tried agricultural practices under irrigation and to find out water requirements of different crops, effect of various agronomic practices on soil and sub-soil water.

B. Av. rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec. to May	Total
1816	6056	3656	3063	694	155	...	15440

(Av. based on rainfall data for 1958-1959, 1962-1963).

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1958. (b) Type of facilities is canal irrigation. (ii) Proper drainage—N.A.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. Black soil upto 4′ depth and below yellowish soil. Structure black heavy soil. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. No. of experiments :

Wheat—2, Cotton—4, Groundnut—1, Total=7.

19. Trial-cum-Demonstration Farm, Kim.

A. General information :

(i) District Surat ½ mile from Kim R.S. Fairly even. (ii) Type of tract "E" region of area under Kakrapara command. (iii) Started in 1959. (iv) Cotton-fallow, wheat-groundnut, jowar-Sann-Green, Cotton-wheat-cotton is the cropping pattern. (v) Research programme-Agronomic as well as plant breeding on various crops.

B. Av. rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Jan. to May	Total
186.4	526.9	182.0	190.8	60.4	...	...	1146.5

(Av. based on rainfall data for the period of 4 year).

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1960. (b) Type of facilities—Canal irrigation. (ii) Proper drainage—N.A.

D. Soil type and soil analysis :

(i) (a) Broad soil type—N.A. 3′ deep. Blackish in colour. Structure—Cloddy aggregates. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. No. of experiments :

Jowar—1, Total=1.

20. Agricultural Research Station, Kodiyadra (1 experiment on cotton only). Details—N.A.

21. Agricultural Research Station, Nakhatrana

A. General informations :

(i) District Kutch, 35 miles from Bhuj R.S. Levelled area. (ii) Type of tract is semi arid. (iii) Started in 1954. (iv) Lucern-cereals, Groundnut-Jowar-Lucern-cotton, Cotton-Groundnut, Wheat-Groundnut is the cropping pattern. (vi) Research programme is agronomic research and demonstration.

B. Av. rain fall in mm.—N.A.

C. Irrigation and drainage facilities :

(i) (a) Facilities available. Since 1954. (b) Type of facilities—N.A. (ii) Proper drainage—N.A.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. Structure sandy loam. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. No. of experiments :

Wheat—1, Total=1.

22. Agricultural Research Station, Navagam.

A. General information .

(i) District Kaira, 10 miles from Barejadi R.S. Latitude 20′—48′ North, Longitude 72°—36′ East, Altitude 150′ above M.S.L. (ii) Type of tract—Kiyari paddy tract served by canal irrigation. (iii) Started in 1945. (iv) Paddy-wheat is the cropping pattern. (v) Research programme is breeding and agronomic experiments on transplanted paddy crop varieties.

B. Av. rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May	Total
135.4	227.3	176.8	804	231.8	24.4	...	3.8	1.0	...	2.8	...	88£.7

(Av. based on rainfall for period N.A.)

C. Irrigation and Drainage facilities :

(i) (a) Facilities available. since 1950. (b) Type of facilities—Canal irrigation. (ii) Proper drainage—N.A.

D. Soil type and soil analysis :

(i) Broad soil type—Alluvial sandy to clay loam. 4′ deep with calcareous impervious strata. Medim black in colour. Structure clayey.

(ii) Chemical analysis :

pH in water	8.1
N	0.070
Phosphoric acid	0.30
Potash (K_2O)	0.36
Lime (CaO)	0.74
Carbon	0.47

(iii) Mechanical analysis.

Moisture	1.73
Carbonate $CaCO_3$	0.71
Coarse sand	9.82
Silt	11.12
Clay	17.52
Fine sand	58.98

E. No. of experiments :

Paddy—10, Total=10.

23. Agricultural Research Station, Porbandar.

A. General information :

(i) (a) District Junagadh, 3 miles from Porbandar R.S. Hilly area, climate on the whole is dry. (ii) Type of tract is Porbandar tract. (iii) Started in 1954. (iv) Cotton-Groundnut is the cropping patern. (v) Research programme—research on Bajri, Jowar, Groundnut, wheat, cotton etc. is carried out with reference to spacing, manure and irrigation.

B. Av. rainfall in mm :

June	July	Aug.	Sept. to May	Total
1166	744	—	—	1910

(Av. based on rainfall data for the period N.A.)

C. Irrigation and drainage facilitiies :

(i) (a) Facilities available since 1954. (b) Type of facilities—Well with 12 H.P. oil engine. (ii) Proper drainage N.A.

D. Soil type and soil analysis :

(i) Broad soil type N.A. 9″ deep. Light red colour. Structure sandy loam. (ii) Chemical analysis pH value is 7.3 (iii) Mechanical analysis N.A.

E. No. of experiments :

Paddy—1, Wheat—2, Bajra—5, Total=8

24. Agricultural Research Station, Surat.

A. General information :

(i) District Surat, 4 miles from Surat R. S. Levelled. (ii) Type of tract—Black Cotton soil of south Gujarat. (iii) Started in 1896. (iv) Cotton and Jowar is the cropping pattern. (v) Research programme is plant breeding, agronomic and entomological work on cotton and jowar and crop weather study.

B. Av. rainfall in mm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	Total
1692.9	4129.0	2737.4	2459.0	510.0	7.4	20.8	1.5	2.5	11.9	4.1	60.7	1163.72

(Av. based on rainfall data for the period—N.A.)

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1957. (b) Cranal irrigation. (ii) Proper drainage available.

D. Soil type and soil analysis :

(i) Broad soil type—Black cotton soil. 4′ to 6′ deep. Black with sticky yellow sub soil. Structure—Fine.

(ii) Chemical analysis

N. 0.024 to 0.43%
P_2O_5 0.05%
K_2O 0.0263 to 0.61%
CaO 0.19 to 1.52%

(iii) Mechanical analysis

Soil surface 9″	Sub soil
Clay and silt 62%	Clay and silt 34%
Fine sand 35%	Fine sand 48%
Stone and gravel 3%	Stone and gravel 18%

E. No. of experiments :

Jowar—24, Cotton—22, R+X—12, Total=58.

25. Agricultural Research Station, Talod.

A. General information :

(i) District Sabarkantha ; 2 miles from Sabarkanth R. S. The soil is of sandy loam type. (ii) Type of tract—North Gujarat. (iii) Started in 1955—1956. (iv) Cropping pattern—Groundnut—cotton. (v) Research in Bajari, Jowar, Mug and Tur for increasing yield and also Agronomic practices such as spacing, thinning, manurial requirements etc. is the programme of researh.

B. Av. rainfall in mm. :

June	July	Aug.	Sept	Oct. to Jan.	Feb.	Mar.	April	May	Total
53.8	543.6	389.6	363.2	—	8.0	2.0	—	—	1360.2

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1959—1960. (b) Type of facilities—N.A. (ii) There is no proper drainage system.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. Depth 2′ to 4′ yellows and 5 to 8 blades.

(ii) Chemical Analysis.		(iii) Mechanical Analysis.	
Moisture	5.10		
N	0.08	Coarse sand	42.01
Phosphate (P_2O_5)	15.00	Fine sand	41.20
Available Potash (K_2O)	18.00	Clay+Silt	9.53
Lime ($CaCO_3$)	2.15		
Total Soluble salts	0.07		
pH	7.50		

E. No. of experiments :

Jowar—5, Bajra—6, Groundnut—9 Total=20.

26. Irrigation-cum-Demonstration Farm, Umrala.

A. General information :

(i) Bhavnagar district, 3 miles from Dhola R. S. The area is rather undulated with both ways slopes in certain plots. (ii) Type of tract—The area is under the Ranghala tank. (iii) Started in 1956. (iv) Cropping pattern—Groundnut—Bajra—Jowar—Cotton, Wheat—Gram etc. (v) Programme of research—To carry out irrigational and agronomic experiments, to study the introduction of new irrigated crops and their suitability.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov.	Dec. to May	Total
100.2	134.0	107.2	119.8	24.0	66.0	—	551.2

(Av. based on rainfall from 1960—1963).

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1956. (b) Type of facilities—N.A. (ii) There is proper drainage system.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. Depth about 3′. Colour—medium black.

(ii) Chemical Analysis % of dry soil as given below. (iii) Mechanical analysis—N.A.

Organic matter	1.031	to 1.653
Total N	0.0237	to 0.0626
P	7.6	to 7.9
Potassium (K)	28.88	to 39.39
Phosphoric acid (P)	15.99	to 32.43

E. No. of experiments :

Paddy—2, Wheat—17, Jowar—5, Bajra—12, Gram—7, Cotton—6, Groundnut—5, R+X—2, Total=56.

27. Soil Conservation Res. Demonstration and Training Centre, Vasad.

A.. *General information* :

(i) Kaira district. Marginal and Table lands. Ravines and gully slopes and waste lands. (ii) Type of tract—The soils are alluvial in nature and are generally loamy in texture, while range of soil texture is sandy loam, silty loam, clay loam. The soils in general are low in total soluble salt contents. (iii) Started in 1955—1956. (iv) Cropping pattern—Cotton, Bajri Mug—Legumes, Tobacco—Kodra, Tur, Grasses. (v) Programme of Research—To find out the ways and means to arrest immediately the devasting rate of soil erosion and prevent the conservation of valuable cultivated marginal and table lands into gullies and research on cotton, legumes, tobacco etc. and some perinnial crops.

B. *Av. rainfall in mms.* :

June	July	Aug.	Sept.	Oct.	Nov.	Dec. to May	Total
101.6	341.2	187.2	184.3	16.0	9.0	—	839.3

(Av. based on rainfall data for the period 1952—1962).

C. *Irrigation and drainage facilities* :

(i) (a) Facilities—N.A. (unirrigated). (b) Type of farilities N.A. (ii) There is no proper drainage system.

D. *Soil type and soil analysis* :

(i) Broad soil type—Sandy loam to loam. (ii) Chemical Analysis. pH—7—2 to 9.5 i.e. mildly alkaline to throughly alkaline, organic carbon—0.048% to 0.68%, Total Nitrogen= 0.01% to 0.07%, most of the soils having less than 0.05% N. Total P_2O_5—0.5 to 0.1% but generally below 1%. (iii) Mechanical analysis—N.A.

E. *No. of experiments* :

Cotton—5, Tobacco—3, Fodder—3, Misc.—8, Total=19.

28. Agricultural Research Station, Vijapur.

A. *General information* :

(i) Mehsana district. 2 miles from Vijapur R. S. The experimental site is situated at about 421′ above M.S.L. The land is not quite even. The difference between the highest and the lowest point is about 30′. (ii) Type of tract—Sandy loam. (iii) Started in 1944. (iv) Cropping pattern—Bajri, Castor, Jowar, Cotton, Tobacco, Fennell—Kharif ; Wheat-Cumin and Isabgol—Rabi. (v) Programme of Research—Selection, breeding and hybridisation in Bajri, wheat and jowar, varietal and agronomic expts, in these crops as well as in cotton, tobacco tur, groundnut, castor and other crops.

B. *Av. rainfall in mm.* :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	Total
70.1	294.9	142.7	224.4	38.7	2.5	0.2	1.2	1.1	—	7.7	0.6	90.27

(Av. based on rainfall data for 5 years).

C. *Irrigation and drainage facilities.*

(i) (a) Facilities—N.A. (b) Type of facilities—N.A. (ii) There is no proper drainage system.

D. *Soil type and soil analysis.*

(i) Broad soil type—Sandy loam, depth—deep soils, depth more than 20′ to 30′, Colour —light brown to light red. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. *No. of experiments.*

Wheat—6, Jowar—3, Bajra—4, Gram—4, Total=17.

29. Agricultural Research Station, Viramgam.

A. General information.

(i) District Ahmedabad 1 mile from Viramgam R.S. The area is quite flat. (ii) Type of tract—Medium black soils. (iii) Started in 1922. (iv) Cropping pattern—Cotton, Jowar—Cotton. (v) Programme of research—Breeding in cotton and jowar to evolve a variety superior to the present.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apl.	May	Total
61.0	250.9	159.3	88.1	7.4	2.8	1.3	1.3	1.8	2.0	0.8	9.9	585.6

(Av. based rainfall data for the period—N.A.)

C. Irrigation and drainage facilities.

(i) (a) Facilities available. (b) Type of facility : Boye well with a pumping set. (ii) There is no proper drainage system.

D. Soil type and soil analysis.

(i) Broad soil type—N.A. Depth 40″ on an average. Colour—Greyish black. Structure—Cloddy. (ii) Chemical analysis. and (iii) Mechanical analysis as below :

Soil depth	pH	Total soluble salts	Calcium carbonate	Exchangeable bases in milli-equivalents		
				Ca	Mg	Na+K
				Percent on fine matter		
0—13″	8.53	0.15	11.2	22.0	3.0	1.5
13″—23″	8.61	0.19	15.6	28.5	4.5	1.0
23″—32″	8.66	0.19	15.2	29.5	6.0	1.0
32″—42″	8.61	0.15	28.8	20.5	5.0	1.0
42″—50″	8.63	0.11	32.8	18.5	4.0	0.5

	Fertility constituents				Mechanical composition	
	Organic Carbon	Total Nitrogen	Available P_2O_5 mg.		Silt	Clay
Soil depth				C/N ratio	Percent on fine matter	
0—13″	0.408	0.056	10.92	7.3	8.75	25.75
13″—23″	—	—	—	—	9.25	32.00
23″—32″	—	—	—	—	10.00	32.50
32″—42″	—	—	—	—	10.00	22.50
42″—50″	—	—	—	—	8.25	14.00

E. No. of experiments :

Cotton—3, Fodder—1, Total=4.

30. Agricultural Research Station, Vyara.

A. General information :

(i) District Surat. It is slightly slopping from west to east. Some western part of the farm is stoney. (ii) Type of tract is black cotton soil of the Surat district. (iii) Started in 1935. (iv) Sugarcane, Paddy and Wheat etc. is the cropping pattern. (v) Field experimentation.

B. Av. rainfall in mm :

June	July	Aug.	Sept.	Oct.	Nov.	Dec. to Mar.	April	May.	Total
108.20	877.31	678.94	563.11	8.89	10.16	—	2.03	5.58	2254.22

(Av. based on rainfall data for the poriod 1958)

C. Irrigation and drainage facilities :

(i) (a) Facilities available since 1935. (b) Type of facilities—N.A. (ii) Proper drainage —N.A.

D. Soil type and soil analysis :

(i) Broad soil type—Black cotton, 0.12″ and 0.18″ deep. Black in colour. and clayey. (ii) Chemical analysis : Lime—2.0 to 5.0%, P_2O_5—0.005 to 0.01%, K_2O—0.02 to 0.06%. (iii) Mechanical analysis—N.A.

E. No. of experiments :

Paddy—10, Sugarcane—17, Total=27.

31. Agricultural Research Station, Waghai.

A. General information :

(i) District Danga, ½ mile from Waghai R.S. The average rainfall is ranging from 60″ to 80″ with minimum temperature ranging 30° to 40° F in winter. (ii) About 65% of the soils (at high level) are of reddish colour with less water holding capacity and very porus, and the remaining, medium black. (iii) Started in 1954. (iv) Paddy and Nagli. (v) Research programme is to evolve high yielding, early maturing and disease resistant strains of paddy.

B. Av. rainfall in mm.

June	July	Aug.	Sept.	Oct.	Nov.	Dec. to May	Total
37.0	51.7	23.5	33.5	7.2	2.5	—	155.4

(Av. based on rainfall data for the period 1961-62, 62-63).

C. Irrigation and drainage facilities :

(i) (a) Facilities—N.A. (b) Type of facilities—N.A. (ii) Proper drainage—N.A.

D. Soil type and soil analysis :

(i) Broad soil type—N.A. More than 3′ deep, medium black in colour and structure sticky. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. No. of experiments :

Wheat—2, Nagli—11, Gram—3, Total=16.

APPENDIX—I

Mechanical and Chemical analysis of Soil

(Per cent on air dry soil)

Farm Section	B.T. R.S.	Horti- culture 31	Horti- culture 33	S.M. F.S. F6	S.M. F.S. F4	Commer- cial	Dairy N4	Dairy A3	College G10	College Building Area.	School Piplo.	School Asopalo.	Plant Breeding.
Auctioned tobacco sample No.	1	2&8	2&8	3	3	4	5&7	5&7	6&10	6&10	9	9	11
Coarse sand	0.60	0.62	0.77	1.14	1.60	0.81	0.96	0.55	0.79	0.49	0.90	0.57	0.66
Fine sand	77.39	83.03	78.73	72.06	67.27	78.53	78 82	81.66	89.30	78.18	83.86	81.69	80.51
Silt	6.00	0.62	7.01	7.26	10.75	7.26	7.38	5.12	1.87	3.25	6.13	4.00	6.12
Clay	14.62	12.63	10.87	16.37	15.62	10.62	12.25	10.00	6.75	14.62	7.75	11.25	10.25
Moisture	1.82	1.14	1.07	2.37	2.00	1.05	1.49	1.31	0.55	1.60	0.83	1.31	1.26
Loss on ignition.	1.68	1.61	1.56	2.02	1.65	1.54	1.44	1.60	1.19	1.83	1.39	1.59	1.61
Total soluble salts.	0.020	0.022	0.020	0.015	0.028	0.02	0.016	.022	0.021	0.016	0.026	0.017	0.024
Calcium carbonate	trace	trace	trace	trace	trace	trace	trace	trace	trace	trace	trace	trace	trace
Organic matter.	0.75	0.44	0.54	0.75	0.67	0.75	0.67	0.67	0.32	0.25	0.34	0.40	0.54
pH	7.3	7.5	7.2	7.2	7.1	7.0	7.0	7.7	7.1	7.2	7.0	7.3	7.4
Total nitrogen.	0.033	0.033	0.038	0.030	0.034	0.039	0.036	.037	0.024	0.021	0.035	0.029	0.030
Nitrate nitrogen mg./100 gm. soil.	1.75	2.25	2.37	1.00	2.20	3.00	1.55	0.67	3.00	0.87	2.67	1.65	2.25
Available phosphoric acid mg./100 gm. soil.	7.6	6.2	7.5	4.3	11.6	20.8	14.2	8.8	3.9	2.6	6.4	6.2	4.5
Exchangeable potassium m.e.K/100 gm. soil.	0.56	0.54	0.61	0.47	0.54	0.54	0.48	0.39	0.40	0.62	0.54	0.48	0.48

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 54(14).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the N and P_2O_5 requirements and their effect on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 7.7.1954. (iv) (a) One ploughing and 3 harrowings. (b) Drilling. (c) 40 lb./ac. (d) 18″ apart. (e) —. (v) 5 C.L./ac. of F.Y.M. in May. (vi) Local (medium). (vii) Irrigated. (viii) Three weedings and 3 inter culturings. (ix) 25.08″. (x) 30.10.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=32$, $N_2=64$ and $N_3=96$ lb./ac.

(2) 4 levels of P_2O_5 : $P_0=0$, $P_1=32$, $P_2=64$ and $P_3=96$ lb./ac.

N as A/S broadcast and P_2O_5 spread in furrows opened by drill.

3. DESIGN :

(i) 4^2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 33′×18′. (b) 25′×12′. (v) Three rows on either side of the whole experimental block and 2 rows on either side of each plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2470 lb./ac. (ii) 307.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	2303	2673	2840	2421	2559
P_1	2210	2412	2786	2831	2560
P_2	2146	2548	2262	2505	2365
P_3	2205	2353	2509	2521	2397
Mean	2216	2496	2599	2569	2470

S.E. of any marginal mean = 76.9 lb./ac.

S.E. of body of table =153.9 lb./ac.

Crop :- Paddy. **Ref :- Gj. 54(28).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'M'.**

Object :—To find out the N and P_2O_5 requirements of drilled Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 16.6.1954. (iv) (a) Three ploughings and 3 harrowings (b) Drilling. (c) 30 lb./ac. (d) 15″ between rows. (e) N.A. (v) Nil. (vi) K-226. (vii) Irrigated. (viii) Four weedings and 2 interculturings. (ix) 41.92″. (x) 25.11.1954.

2. TREATMENTS :

Same as in expt.no. 54(14) above.

3. DESIGN :

(i) 4^2 Fact. in R.B.D. (ii) (a) 16. (b) 240′×50′. (iii) 4 (3 effective replications). (iv) (a) 30′×25′. (b) 20′×15′. (v) 5′ alround net plot. (vi) Yes.

4. GENERAL :

(i) The germination in replication 4 was defective. Growth in the rest three replications was good. There was lodging in some plots at the time of maturity. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951-55. (b) Yes (except in the year 1951). (c) Nil. (v) (a) Bulsar. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1554 lb./ac. (ii) 489.3 lb./ac. (iii) None of the effects and interaction is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1440	1343	1827	1634	1561
P_1	1428	1512	1694	1113	1437
P_2	1125	1525	1742	1972	1591
P_3	1888	1754	1767	1097	1626
Mean	1470	1533	1758	1454	1554

S.E. of any marginal mean =141.3 lb./ac.
S.E. of body of table =282.5 lb./ac.

Crop :- Paddy. **Ref :- Gj. 55(15).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'M'.**

Object :—To find out the N and P_2O_5 requirements of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-paddy. (b) Paddy. (c) As per treatments. (ii) (a) Black soil. (b) Refer soil analysis, Dabhoi. (iii) 16.6.1955. (iv) (a) N.A. (b) Drilling. (c) 30 lb./ac. (d) 15″ between rows. (e) N.A. (v) Nil. (vi) K-226. (vii) Irrigated. (viii) Three weedings and 1 interculturing. (ix) 51.18″. (x) 26.11.1955.

2. TREATMENTS :

Same as in Expt. no. 54(14) on page 1.
Time and method of application N.A.

3. DESIGN :

(i) 4^2 Fact. in R.B.D. (ii) (a) 16. (b) 240′×50′. (iii) 4. (iv) (a) 30′×25′. (b) 20′×15′. (v) 5′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Lodging in all the plots at the time of maturity. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—1955 (b) Yes. (c) Nil. (v) (a) Bulsar and Amreli. (b) No. (vi) Nil. (vii) In N_3 plots due to more vegetative growth yield is less.

5. RESULTS :

(i) 2109 lb./ac. (ii) 512.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	2189	2058	2305	1661	2053
P_1	2247	2168	2136	1724	2069
P_2	1770	1933	2654	2442	2200
P_3	2177	2311	2298	1673	2115
Mean	2096	2118	2348	1875	2109

S.E. of any marginal mean =128.2 lb./ac.
S.E. of body of table =256.3 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 56(44).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To study the effect of N applied in different forms, with and without P_2O_5, on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black, (b) Refer soil analysis, Junagadh. (iii) 30.6.1956. (iv) (a) N.A. (b) Drilling. (c) 20 lb./ac. (d) Between rows—18″; between plants—irregular. (e) N.A. (v) Farm compost at 10 C.L./ac. (vi) M.S.3 (*Bhimli* type) medium. (vii) Irrigated. (viii) Gap-filling, thinning and 4 weedings. (ix) 59.56″. (x) 25, 28.10.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) Levels and sources of N : N_0=0 and N'_1=20 lb./ac. as G.N.C., N_1''=20 lb./ac. as A/S, N_2=40 lb./ac. as A/S and G.N.C. (1 : 1).

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=30 lb./ac.

N applied at sowing and one month after sowing. P_2O_5 applied before sowing at root zone.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 15′×9′. (b) 12′×6′. (v) 1½′×1½′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of paddy blast was observed, damage negligible hence no control measures were taken. (iii) Grain and fodder yield. (iv) (a) 1956—Contd. (b) No. (c) Nil. (v) (a) N.A. (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1542 lb./ac. (ii) 283.7 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1'	N_1''	N_2	Mean
P_0	1617	1254	1512	1450	1458
P_1	1853	1307	1656	1689	1626
Mean	1735	1281	1584	1570	1542

S.E. of N marginal means =100.3 lb./ac.
S.E. of P marginal means = 70.9 lb./ac.
S.E. of body of table =141.8 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 57(52).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find out the N and P_2O_5 requirements of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 13.6.1957. (iv) (a) One ploughing and 2 harrowings. (b) Drilling. (c) 30 lb./ac. (d) Bet. rows 9″ ; between plants-irregular. (e) N.A. (v) Farm compost at 20 C.L./ac. (vi) S-29 (medium). (vii) Irrigated. (viii) Three gap-fillings, thinning, 3 weedings and 2 interculturings. (ix) 30.21″. (x) 8 to 10.10.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=30$, $N_2=40$ and $N_3=50$ lb./ac.

(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=30$ and $P_2=40$ lb./ac.

N applied as A/s on 1.7, 10.8 and 4.9.1957. P_2O_5 applied as Super, drilled at the time of sowing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 24′×12′. (b) 20′×9′. (v) 2′×1½′. (vi) Yes.

4. GENERAL :

(i) The general growth was normal. (ii) Nil. (iii) Number of tillers, av. height, av. length of ears, av. no. of grains/ear, grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2097 lb./ac. (ii) 238.4 lb./ac. (iii) Main effects of N, P and interaction N×P are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1244	2065	2024	2410	1936
P_1	1406	2200	2379	2654	2160
P_2	1623	2205	2422	2526	2194
Mean	1424	2157	2275	2530	2097

S.E. of N marginal means = 59.7 lb./ac.
S.E. of P marginal means = 68.8 lb./ac.
S.E. of body of table =119.1 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 58(105).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To study the response of Paddy to N and P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 40 lb./ac. of N and 40 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 1.7.1958. (iv) (a) N.A. (b) Hand sowing. (c) 30 lb./ac. (d) 9″ between rows. (e) —. (v) Nil. (vi) S-201. (vii) Unirrigated. (viii) Nil. (ix) 33.27″. (x) N.A.

2. TREATMENTS:

All combinations of (1), (2) and (3)+3 selective treatments

(1) 3 levels of N as A/S : $N_1=30$, $N_2=40$ and $N_3=50$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=40$ lb./ac.

(3) 2 methods of applications of N : M_1=Broadcasting and M_2=Placement 2″ deep.

3 selective treatments : $T_0=0$, $T_1=30$ and $T_2=40$ lb./ac. of P_2O_5.

N applied in 3 doses on 1.7.1958, 6.8.1958 and 6.9.1958 ; P_2O_5 applied on 1.7.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 21. (b) N.A. (iii) 4. (iv) (a) 22′×15′. (b) 18′×12′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1409 lb./ac. (ii) 142.2 lb./ac. (iii) Main effect of N and 'selective vs others' differ highly significantly. Other main effect and interactions do not differ significantly. (iv) Av. yield of grain in lb./ac.

Selective treatments : T_0=784, T_1=819 and T_2=886 lb./ac.

	N_1	N_2	N_3	Mean	P_0	P_1	P_2
M_1	1279	1476	1716	1491	1476	1509	1487
M_2	1314	1520	1728	1520	1498	1540	1523
Mean	1296	1498	1722	1505	1487	1524	1505
P_0	1277	1464	1720				
P_1	1320	1545	1708				
P_2	1292	1485	1738				

S.E. of marginal mean of N or P	=29.0 lb./ac.
S.E. of marginal mean of M	=23.7 lb./ac.
S.E. of body of N×M and P×M tables	=41.0 lb./ac.
S.E. of body of N×P table	=50.3 lb./ac.
S.E. of selective treatment means	=71.1 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59(105).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To study the response of Paddy to N and P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Vegetable. (c) 40 lb./ac. of N and 40 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 30.6.1959. (iv) (a) N.A. (b) Drilling. (c) 30 lb./ac. (d) N.A. (e) N.A. (v) 15 C.L./ac. of F.Y.M. (vi) G-29. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in Expt. no. 58 (105) on page 4.

3. DESIGN :

(i) R.B.D. (ii) (a) 21. (b) N.A. (iii) 4. (iv) (a) 22′×15′. (b) 18′×12′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL.

(i) N.A. (ii) No. (iii) Grain yield. (iv) (a) 1958—contd. (b) and (c) .No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 813 lb./ac. (ii) 184.6 lb./ac. (iii) Only "selective *vs* others" is highly significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

Selective treatments : T_0=560, T_1=668 and T_2=675 lb./ac.

	N_1	N_2	N_3	Mean	P_0	P_1	P_2
M_1	848	839	902	863	805	892	892
M_2	808	840	818	822	858	794	814
Mean	828	840	860	843	832	843	853
P_0	879	785	831				
P_1	781	891	857				
P_2	824	842	892				

S.E. of marginal mean of N or P	=37.7 lb./ac.
S.E. of marginal mean of M	=30.8 lb./ac.
S.E. of body of N×M and P×M tables	=53.3 lb./ac.
S.E. of body of N×P table	=65.3 lb./ac.
S.E. of selective treatment means	=92.3 lb./ac.

Crop :-Paddy. **Ref :- Gj. 56(52).**

Site :-Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of graded doses of K_2O on the growth and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) 87 Srs/ac. of manure mixture, 18 Srs/ac. of A/N and 11 Srs/ac. of G.N.C. (ii) (a) Medium black soil. (b) Refer soil analysis, Navagam. (iii) 28.6.1956./19.8.1956. (iv) (a) N.A. (b) Transplanting. (c)—. (d) 9″×9″. (e) 1. (v) F.Y.M. at 5 C.L./ac. (vi) *Jirasal* 280. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 37.58″. (x) 14.11.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N and P : N_1P_1=60 lb./ac. of N+30 lb./ac. of P_2O_5, N_2P_2=120 lb./ac. of N+60 lb./ac. of P_2O_5.

(2) 3 levels of K_2O : K_0=0, K_1=30 and K_2=60 lb./ac.

N applied as A/S, P_2O_5 as Super and K_2O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 34½′×16½′. (b) 30′×12′. (v) 2¼′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of jassids and leaf eating caterpillar (case worms). Dusting with Gammexane. (iii) Grain and straw yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Vyara. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3124 lb./ac. (ii) 300 lb./ac. (iii) Main effect of NP alone is significant. (iv) Av. yield of grain in lb./ac.

	K_0	K_1	K_2	Mean
N_1P_1	3373	3288	3185	3282
N_2P_2	3016	2813	3067	2965
Mean	3194	3051	3126	3124

S.E. of marginal mean of NP = 86.6 lb./ac.
S.E. of marginal mean of K =106.1 lb./ac.
S.E. of body of table =150.0 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 57(61).**

Site :- Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of graded doses of K_2O on the growth and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) F.Y.M. at 5 C.L./ac. (ii) (a) Black soil. (b) Refer soil analysis, Navagam. (iii) 8.7.1957/24.8.1957. (iv) (a) One ploughing. (b) Transplanting. (c) —. (d) 9″×9″. (e) 1. (v) F.Y.M. at 5 C.L./ac. (vi) *Jirasal* 280. (vii) Irrigated. (viii) One interculturing. (ix) 13″. (x) 19.11.1957.

2. TREATMENTS :

Same as in expt. no. 56(52) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 16½′×34½′. (b) 12′×30′. (v) 2.25′ alround. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of jassids and leaf eating caterpillar—Gammexane applied. (iii) Growth of crop, tiller counts and grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3278 lb./ac. (ii) 313.8 lb./ac. (iii) Main effect of NP alone is significant. (iv) Av. yield of grain in lb./ac.

	K_0	K_1	K_2	Mean
N_1P_1	3677	3940	4065	3894
N_2P_2	2533	2783	2666	2661
Mean	3105	3362	3366	3278

S.E. of marginal mean of N P =110.9 lb./ac.
S.E. of marginal mean of K = 90.6 lb./ac.
S.E. of body of table =156.9 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 58(44).**

Site :- Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of graded doses of K_2O on the growth and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat (b) Wheat. (c) 24 srs/ac. of Triple Super, 50 srs./ac. of A/S and 25 srs/ac. of Nitro. Phos. (ii) Black soil. (b) Refer soil analysis, Navagam. (iii) 24.6.1958/12.8.1958. (iv) (a) Ploughing 24.7.1958 to 30.7.1958. (b) Transplanting. (c) —. (d) 9"×9". (e) 1. (v) F.Y.M. at 5 C.L./ac. (vi) *Jirasal*-280. (vii) Irrigated. (viii) Two interculturings. (ix) 30". (x) 18 to 20.11.1958.

2. TREATMENTS :

Same as in Expt. no. 56(52) on page 6.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) $34\frac{1}{2}' \times 16\frac{1}{2}'$. (b) 30'×12'. (v) 2.25' alround the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Count of tillers, grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2851 lb./ac. (ii) 417.2 lb./ac. (iii) Main effect of N P alone is significant. (iv) Av. yield of grain in lb./ac.

	K_0	K_1	K_2	Mean
N_1P_1	2420	2874	2713	2669
N_2P_2	2961	2913	3228	3034
Mean	2690	2894	2970	2851

S.E. of marginal mean of N P =120.4 lb./ac.
S.E. of marginal mean of K =147.5 lb./ac.
S.E. of body of table =208.6 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59(57).**
Site :- Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of graded doses of K_2O on growth and yield of Paddy.

1. BASAL CONDITIONS :
(i) (a) Paddy—Wheat. (b) Wheat. (c) 43 srs./ac. of Super, 70 srs./ac. of A/S and 23 srs/ac. of K_2O. (ii) (a) Black soil. (b) Refer soil analysis, Navagam. (iii) 5.7.1959/11.8.1959. (iv) (a) N.A. (b) Transplanting. (c)—. (d) 9″×9″. (e) 1. (v) F.Y.M. at 5 C.L./ac. (vi) *Jirasal*-280. (vii) Irrigated. (viii) Two interculturings. (ix) 42″. (x) 20.11.1959.

2. TREATMENTS :
Same as in expt. no. 56(52) on page 6.
Manuring on 8.8.1959.

3. DESIGN :
(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 34.5′×16.5′. (b) 30′×12′. (v) 2.25′ alround the net plot. (vi) Yes.

4. GENERAL :
(i) Normal. (ii) Mild attack of jassids—dusting with Gammexane. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :
(i) 2534 lb./ac. (ii) 175.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	K_0	K_1	K_2	Mean
N_1P_1	2450	2454	2389	2431
N_2P_2	2639	2563	2726	2642
Mean	2544	2508	2557	2534

S.E. of marginal mean of NP =50.65 lb./ac.
S.E. of marginal mean of K =62.04 lb./ac.
S.E. of body of table =87.73 lb./ac.

Crop :- Paddy. **Ref :- Gj. 55(45).**
Site :- Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of time and method of application of N on the yield and growth of Paddy.

1. BASAL CONDITIONS :
(i) (a) Paddy—Wheat. (b) Wheat. (c) F.Y.M. at 15 C.L./ac. (ii) (a) Medium black soil. (b) Refer soil analysis, Navagam. (iii) 2.7.1955/23 to 26.8.1955. (iv) (a) N.A. (b) Transplanting. (c)—. (d) 10″×10″. (e) 1. (v) F.Y.M. at 5 C.L./ac. (vi) *Pankhari*-203. (vii) Irrigated. (viii) Two interculturings and 2 weedings. (ix) 23.91″. (x) 13.11.1955.

2. TREATMENTS :
Main-plot treatments :
2 levels of N as A/S : N_1=30 and N_2=60 lb./ac.
Sub-plot treatments :
12 times of application of N : N_0=Control (no top dressing), M_1=full dose at 1st ploughing, M_2=full dose broadcast at transplanting, M_3=full dose as pellets at transplanting, M_4=½ dose broadcast at transplanting+½ broadcast at tillering, M_5=½ dose as pellets at transplanting+½ dose as pellets at tillering, M_6=Dry application of ½ dose at 1st ploughing+½ dose broadcast at tillering, M_7=Dry application of ½ dose at 1st ploughing+½ dose broadcast at tillering. M_8=½ dose broadcast at transplanting + ¼ dose broadcast at tillering+¼ dose in pellets at pre-flowering. M_9=¼ dose in pellets at tillering+¼ dose in pellets at flowering +½ dose in pellets at transplanting. M_{10}=½ dose application at precultivation stage+¼ dose broadcast at tillering +¼ dose broadcast at flowering. M_{11}=½ dose dry application at pre-cultivation stage +¼ dose in pellets at tillering +¼ dose in pellets at preflowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 35′×20′ (b) 30′×15′. (v) 2½′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Mild attack of blast. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1943 lb./ac. (ii) (a) 422.6 lb./ac. (b) 201.9 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}	Mean
N_1	1556	1682	1977	1885	1999	1931	1955	1900	2103	2057	1803	1750	1883
N_2	1476	1839	2314	2132	2224	1989	1936	1909	2333	2054	2001	1882	2002
Mean	1516	1760	2146	2008	2112	1960	1946	1904	2218	2055	1902	1786	1943

S.E. of difference of two
1. N marginal means = 86.3 lb./ac.
2. M marginal means =101.0 lb./ac.
3. M means at the same level of N =142.8 lb./ac.
4. N means at the same level of M =161.6 lb./ac.

Crop :- Paddy. **Ref :- Gj. 56(53).**
Site :- Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of time and method of application of N on the yield and growth of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) 122 srs/ac. of manure mixture+17 srs/ac. of G.N.C.+25 srs/ac. of A/S. (ii) (a) Medium black soil. (b) Refer soil analysis, Navagam. (iii) 28.6.1956.,/16 to 18.8.1956. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 10″×10″. (e) 1. (v) F.Y.M. at 5 C.L./ac. (vi) *Pankhari*—203. (vii) Irrigated. (viii) Two interculturings, and two weedings. (ix) 37.58″ (x) 14, 15.11.1956.

2. TREATMENTS :

Same as in expt. no. 55(45) on page 8.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 33′-4″×18′-4″. (b) 30′×15′. (v) 1′8″ round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of case worm-dusting of Gammexane. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2315 lb./ac. (ii) (a) 108.1 lb./ac. (b) 240.4 lb.ac. (iii) Main effects of N and M are highly significant. Interaction is not significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}	Mean
N_1	1646	2217	2043	2173	2224	2207	2209	2176	2154	2209	2188	2076	2127
N_2	1517	2415	2570	2667	2618	2664	2587	2517	2536	2744	2676	2519	2503
Mean	1582	2316	2307	2420	2421	2436	2398	2346	2345	2477	2432	2298	2315

S.E. of difference of two,
1. N marginal means = 22.1 lb./ac.
2. M marginal means =120.2 lb./ac.
3. M means at the same level of N =170.0 lb./ac.
4. N means at the same level of M =164.3 lb./ac.

Crop :- Paddy *(Kharif).* **Ref :- Gj. 57(62).**

Site :- Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of time and method of applications of N on the yield and growth of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) 48 srs. of triple Super, 112 srs. of manure mixture, 80 srs. of Nitro Phos., 12 srs. of Super, 45 srs. of A/N and 70 srs. of A/S per acre. (ii) (a) Black soil. (b) Refer soil analysis, Navagam. (iii) 8.7.1957/20, 23.8.1957. (iv) (a) Two ploughings. (b) Transplanted. (c) —. (d) 10″×10″. (e) 1. (v) 5 C.L./ac. of F.Y.M. (vi) *Pankheri*—203. (vii) Irrigated. (viii) Two interculturings. (ix) 13″. (x) 23 to 25.11.1957.

2. TREATMENTS :

Same as in Expt. no. 55(45) on page 8.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 35′×20′. (b) 30′×15′. (v) 2·5′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory ; but crop suffered due to inadequate rains. (ii) Attack of Jessids and leaf—eating catterpiller and blast—Dusting with gammexane. (iii) Grain and fodder yield, growth, spread, height and colour of leaves. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1686 lb./ac. (ii) (a) 502 lb./ac. (b) 418.6 lb./ac. (iii) None of the effects and interaction is significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}	Mean
N_1	1494	1727	1485	1494	1402	2181	1600	1757	1404	1444	1800	1446	1603
N_2	1413	1768	1470	1966	1951	1940	2035	2113	1618	1792	1647	1526	1770
Mean	1453	1747	1477	1730	1676	2060	1817	1935	1511	1618	1723	1486	1686

S.E. of difference of two
1. N marginal means =102.5 lb./ac.
2. M marginal means =209.3 lb./ac.
3. M means at the same level of N =296.0 lb./ac.
4. N means at the same level of M =301.4 lb./ac.

Crop :- Paddy *(Kharif).* **Ref :- Gj. 58(45).**

Site :- Agri. Res. Stn., Navagam. **Type :- 'M'.**

Object :—To study the effect of time and method of application of N on the yield and growth of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) 100 srs./ac. of triple Super+200 srs./ac. of A/S+50 srs./ac. of Nitro Phos. (ii) (a) Black soil. (b) Refer soil analysis, Navagam. (iii) 24.6.1958/4,5.6.8.1958. (iv) (a) Two ploughings. (b) Transplanting. (c) —. (d) 10″×10″. (e) 1. (v) 5 C.L./ac. of F.Y.M. (vi) *Jirasal* —280 (vii) Irrigated. (viii) Three interculturings. (ix) 30″ (x) 22,23 and 24.11.1958.

2. TREATMENTS :

Same as in expt. no. 55(45) on page 8.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 32′-6″×18′-4″. (b) 30′×15′. (v) N A. (vi) Yes.

4. GENERAL :

(i) Rainfall was normal but irregular. Crop had leafy growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2406 lb./ac. (ii) (a) 273.0 lb./ac. (b) 380.1 lb./ac. (iii) Main effects of N and M are significant. Interaction is not significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}	Mean
N_1	1888	1970	2057	2067	1972	2461	2101	2280	2084	2188	2318	1897	2107
N_2	1965	2430	2739	3086	2899	2819	2691	2771	2858	3088	2691	2420	2705
Mean	1926	2200	2398	2576	2435	2640	2396	2525	2471	2638	2504	2159	2406

S.E. of difference of two.

1. N marginal means = 55.7 lb./ac.
2. M marginal means =190.1 lb./ac.
3. M means at the same level of N =268.8 lb./ac.
4. N means at the same level of M =263.2 lb./ac.

Crop :- Paddy *(Kharif)* **Ref :- Gj. 56(78).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of different nitrogenous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 40 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 19.6.1956/19.7.1956. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 9″×9″. (e)—. (v) F.Y.M. at 5 C.L. ac.+Super at 20 lb./ac. of P_2O_5 (vi) Z—31. (vii) Irrigated. (viii) Three weedings and 2 interculturings. (ix) N.A. (x) 1.11.1956.

2. TREATMENTS :

5 sources to supply 40 lb./ac. of N and a control, :— S_0=0, S_1=A/S, S_2=Urea, S_3=C/N, S_4=Calcium cynamide and S_5=A/S/N.
Fertilizers applied on 18.7.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24′×36′. (b) 18′×30′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Lodging up to 20%. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2631 lb./ac. (ii) 326.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield.	2364	2883	2818	2263	2535	2924

S.E./mean =163.4 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 57(100).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of different nitrogenous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) F.Y.M. at 10 C.L./ac.+120 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 25.6.1957/23.7.1957. (iv) (a) 2 ploughings and 1 harrowing. (b) Transplanting. (c) —. (d) 9″×9″. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5. (vi) Z-31. (vii) Irrigated. (viii) One interculturing. (ix) 36″. (x) 31.10.1957.

2. TREATMENTS :

Same as in expt. no. 56(78) on page 11.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24′×36′. (b) 18′×30′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Heavy lodging in October which caused damage upto 10%. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3332 lb./ac. (ii) 264.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	2878	3569	3614	2934	3206	3791

S.E./mean =132.1 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 58(66).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of different nitrogenous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 10 C.L./ac. of F.Y.M.+120 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 13.6.1958/25.7.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9″×9″. (e) —. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5. (vi) Z-31. (vii) Irrigated. (viii) Two interculturings. (ix) 88″. (x) 3.11.1958.

2. TREATMENTS :

Same as in expt. no. 56(78) on page 11.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24′×36′. (b) 18′×30′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Very poor growth due to heavy rains. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956-1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2997 lb./ac. (ii) 180.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	2869	3111	3101	2712	3035	3155

S.E./mean =90.0 lb./ac

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 56(77).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of different phosphatic manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 5 C.L. of F.Y.M.+34 lb./ac. of N+G.M. (amount N.A.). (ii) (a) Black soil. (b) N.A. (iii) 19.6.1956/19.7.1956. (iv) (a) N.A. (b) Transplantings. (c) —. (d) 9″×9″. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+40 lb./ac. of N. (vi) Z—31. (vii) Irrigated. (viii) Three weedings and 2 interculturings. (ix) N.A. (x) 4.11.1956.

2. TREATMENTS :

5 sources to give 20 lb./ac. of P_2O_5 and a control :— $P_0=0$ P_1=Triple super, P_2=B.M., P_3=Di-calcium phosphate, P_4=Hyper and P_5=*Kotka*.

Manures applied on 19.3.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24′×36′. (b) 18′×30′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—1958. (b) —. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3428 lb./ac. (ii) 180.4 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	P_0	P_1	P_2	P_3	P_4	P_5
Av. yield	3428	3529	3509	3428	3403	3272

S.E./mean =90.2 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 57(99).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of different phosphatic manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 10 C.L./ac. of F.Y.M.+18 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 25.6.1957/26.7.1957. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 9″×9″. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+40 lb./ac. of N. (vi) Z—31. (vii) Irrigated. (viii) One interculturing. (ix) 36″. (x) 1.11.1957.

2. TREATMENTS :

Same as in expt. no. 56(77) above.
Manures applied on 26.7.1957.

3. DESIGN :

(i) R.B D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24′×36′. (b) 18′×30′. (iv) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Good but heavy lodging. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3681 lb./ac. (ii) 171.2 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	P_0	P_1	P_2	P_3	P_4	P_5
Av. yield	3720	3531	3566	3680	3793	3794

S.E./mean =85.6 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 58(65).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of different phosphatic manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 10 C.L. of F.Y.M.+120 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 23.6.1958/19.7.1958. (iv) (a) 2 ploughings and 1 harrowing. (b) Transplanting. (c) —. (d) 9″×9″. (e) N.A. (v) 5 C.L. of F.Y.M.+40 lb./ac. of N. (vi) Z—31. (vii) Irrigated. (viii) Two interculturings. (ix) 88″. (x) 1.11.1958.

2. TREATMENTS :

Same as in expt. no. 56(77) on page 13.
Time and method of application N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24′×35′. (b) 18′×30′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and fodder yield. (iv) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) The yield suffered due to heavy rains. (vii) Nil.

5. RESULTS :

(i) 2901 lb./ac. (ii) 305.0 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	P_0	P_1	P_2	P_3	P_4	P_5
Av. yield	2863	2981	2654	2813	3110	2987

S.E./mean =152.5 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 55(92).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of graded doses of K_2O on yield and lodging of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Sann as G.M.+5 C.L. of F.Y.M.+30 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 23.6.1955/24.7.1955. (iv) (a) Japanese method of cultivation. (b) Transplanting. (c) —. (d) 10″×10″. (e) 4. (v) 5 C.L./ac. of F.Y.M. (vi) Z—31. (vii) Irrigated. (viii) Two interculturings. (ix) 77.97″. (x) 29.10.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 doses of N and P : M_1=60 lb./ac. of N+30 lb./ac. of P_2O_5 and M_2=120 lb./ac. of N+60 lb./ac. of P_2O_5.

(2) 3 levels of K_2O : K_0=0, K_1=60 and K_2=120 lb./ac.

Manures applied in three doses on 24.7.1955, 25.8.1955 and 16.9 .1955.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 15′×35′. (b) 10′×30′. (v) 2.5′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Poor ; heavy lodging. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) No. (b) and (c) Nil. (v) (a) N.A. (b) Nil. (vi) Heavy rains and strong winds after transplantation . (vii) Nil.

5. RESULTS :

(i) 2269 lb./ac. (ii) 300.2 lb./ac. (iii) M effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	K_0	K_1	K_2	Mean
M_1	2623	2498	2605	2575
M_2	2076	1951	1861	1963
Mean	2349	2210	2233	2269

S.E. of M marginal mean = 86.7 lb./ac.
S.E. of K marginal mean = 106.1 lb./ac.
S.E. of body of table = 150.1 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59(2).**

Site :- T.C.D. Farm, Chikhali. **Type :- 'M'.**

Object :— To study the suitable time of application of N for Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Deep black soil. (b) N.A. (iii) 28.7.1959./14.8.1959. (iv) (a) 2 ploughings, 2 harrowings. (b) Transplanting. (c) —. (d) 10″×10″. (e) —. (v) 20 lb./ac. of P_2O_5 at puddling. (vi) Z—31. (vii) Un-irrigated. (viii) 2 interculturings and 2 weedings. (ix) 104.9″. (x) 16.11.1959.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).
(1) 2 sources of 40 lb./ac. of N : S_1=Urea and S_2=A/s.
(2) 7 times of application of N : T_1=Before planting, T_2=at planting, T_3=at tillering, $T_4=\frac{1}{2}$ before planting and $\frac{1}{2}$ at tillering, $T_5=\frac{1}{2}$ at planting+$\frac{1}{2}$ at tillering, $T_6=\frac{1}{3}$ before planting+$\frac{1}{3}$ at tillering+$\frac{1}{3}$ at one week before flowering and $T_7=\frac{1}{3}$ at planting+$\frac{1}{3}$ at tillering+$\frac{1}{3}$ at one week before flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) 105′×75′. (iii) 3. (iv) (a) 35′×15′. (b) 30′×10′. (v) 2.5′ alround. (vi) Yes.

4. GENERAL :

(i) Heavy lodging in early October 1959 due to heavy rains and strong winds which resulted in 1 to 1.5% grain loss. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1959—contd. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2232 lb./ac. (ii) 266.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 2227 lb./ac.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Mean
S_1	2576	2167	2334	2249	2142	2213	2082	2252
S_2	2277	2455	2043	2032	2164	2312	2211	2213
Mean	2426	2311	2188	2140	2153	2262	2146	2232

S.E. of S marginal means = 58.2 lb./ac.
S.E. of T marginal means = 108.9 lb./ac.
S.E. of body of table or control mean = 154.0 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59(3).**

Site :- T.C.D. Farm, Chikhali. **Type :- 'M'.**

Object :—To study the effect of different organic and inorganic manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal*. (b) and (c) N.A. (ii) (a) Deep black ; clay to clay loam. (b) N.A. (iii) 13.8.1959. (iv) (a) 2 harrowings. (b) Transplanting. (c) —. (d) 10″×10″. (e) 4. (v) Nil. (vi) Z—31. (vii) Un-irrigated. (viii) 2 interculturing and 2 hand weedings. (ix) 104.9″. (x) 17.11.1959.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)
(1) 3 levels of N : N_0=0, N_1=30 and N_2=60 lb./ac.
(2) 3 levels of P_2O_5 : P_0=0, P_1=30 and P_2=60 lb./ac.
(3) 3 levels of K_2O : K_0=0, K_1=30 and K_2=60 lb./ac.
(4) 2 levels of F.Y.M. : F_0=0 and F_1=5000 lb./ac.
Sources, time and method of application N.A.

3. DESIGN :

(i) $3^3\times2$ Fact. confd. (ii) (a) 9 plots/block ; 6 blocks/replication. (b) 105′×45′. (iii) 1. (iv) (a) 35′×15′. (b) 30′×10′. (v) 2.5′ alround. (vi) Yes.

4. GENERAL :

(i) Crop was heavily lodged in early Oct. 1959 due to heavy rains and strong winds which resulted in 1 to 1·5% grain loss. (ii) Nil. (iii) No. of tillers, height, grain and fodder yield. (iv) (a) 1959—contd. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2051 lb./ac. (ii) 175.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	1946	2004	1946	1994	1925	1977	1905	1988	2002	1965
F_1	2134	2166	2109	2145	2179	2085	2101	2126	2182	2136
Mean	2040	2085	2027	2069	2052	2031	2003	2057	2092	2051
K_0	1984	2023	2002	2094	2002	1913				
K_1	2046	2115	2009	2017	2108	2045				
K_2	2089	2117	2071	2097	2045	2135				
P_0	2167	2091	1950							
P_1	2039	2076	2039							
P_2	1913	2087	2093							

S.E. of marginal means of N, P or K =41.4 lb./ac.
S.E. of marginal means of F =33.8 lb./ac.
S.E. of body of N×P, N×K or P×K tables =71.8 lb./ac.
S.E. of body of F×N, F×P or F×K tables =58.6 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj, 59(58).**
Site :- T.C.D. Farm, Bardoli. **Type :- 'MV'.**

Object :—To find out the response of different varieties to N and P manuring.

1. BASAL CONDITIONS :

(i) (a) Paddy—*boal*, Sann—Paddy. (b) Paddy. (c) 5 C.L. lb./ac. of F.Y.M.+300 lb./ac. G.N.C.+100 lb./ac. A/S+100 lb./ac. of Super. (ii) (a) Deep black soil. (b) Refer soil analysis, Bardoli. (iii) 31.7.1959 1.8.1959. (iv) (a) One ploughing. (b) Transplanting. (c) —. (d) 10″×10″. (e) 2 to 3. (v) 5 C.L. /ac. of F.Y.M. broadcasted. (vi) As per treatments. (vii) Irrigated. (viii) Two Interculturings. (xi) 100″. (x) 7 and 25.11.1959.

2. TREATMENTS :

Main-plot treatments
4 varieties : V_1=Kanda—176-12, V_2=Zenia-31, V_3=E.K.-70 and V_4=K-42.
Sub-plots treatments
All combinations of (1) and (2).
(1) 2 levels of N : No=0 and N_1=40 lb./ac.
(2) 2 levels of P_2O_5 P_0=0 and P_1=20 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 36′×21′. (b) (b) 30′×15′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) One spraying of Folidol-605 to control Rice hispa and leaf caterpillars. (iii) Grain and fodder yield. (iv) (a) 1959-contd. (b) —. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1709 lb./ac. (ii) (a) 243.0 lb./ac. (b) 184.4 lb./ac. (iii) N effect alone is highly significant. (iv) Av yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	Mean	P_0	P_1
N_0	990	1105	999	1227	1080	1033	1128
N_1	2268	2353	2313	2418	2338	2365	2310
Mean	1629	1729	1656	1823	1709	1699	1719
P_0	1659	1669	1636	1831			
P_1	1599	1789	1675	1814			

S.E. of difference of two

1.	V marginal means	= 60.7 lb./ac.
2.	N or P marginal means	= 46·1 lb./ac.
3.	N or P means at the same level of V	= 92.2 lb./ac.
4.	V or P means at the same level of N or P	=107.8 lb./ac.
5.	S.E. of body of N×P table	= 46.1 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 54(46).**
Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the most suitable spacing for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 7.7.54. (iv) (a) Plouging, 2 harrowings and intercultures. (b) Drilling. (c) 40 lb./ac. (d) As per treatments. (e)—. (v) 8 lb./ac. of P_2O_5 at sowing. 40 lb./ac. of N as A/S and manure mixture applied as two top dressings. (vi) Local (medium). (vii) Irrigated. (viii) Three weedings, 3 interculturings. (ix) 20″. (x) 30.10.1954.

2. TREATMENTS :

1. 9″ spacing between two lines.
2. 18″ spacing between two lines.

3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′ all round the net plot. (vi) Yes.

4: GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1249 lb./ac. (ii) 137.5 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatments	1	2
Av. yield	1275	1222

S.E./mean=56.1 lb./ac.

Crop :- Paddy *(Kharif).* **Ref :- Gj. 55(33).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the most suitable spacing for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 30.6.1955. (iv) (a) Two ploughings and 3 harrowings. (b) Drilling. (c) 40 lb./ac. (d) As per treatments. (e) N.A. (v) 200 lb./ac. of manure mixture and 200 lb./ac. of P_2O_5. (vi) Junagadh (local). (vii) Irrigated. (viii) 3 interculturings. (ix) 13.75″. (x) 17.10.1955.

2. TREATMENTS :
Same as in expt. no. 54(46) on page 17.

3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 51′×12′. (b) 45′×6′. (v) 3′ all round the plot. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 683 lb./ac. (ii) 195.4 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatments	1	2
Av. yield	836	530

S.E./mean =79.8 lb./ac.

Crop :- Paddy *(Kharif).* **Ref :- Gj. (57)37.**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the most suitable spacing for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann (G.M.). (c) 100 lb./ac. of Super. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 26.6.1957. (iv) (a) Ploughing and harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) 400 lb. of A/S applied in four equal doses at sowing one month, two months and 2½ months after sowing. (vi) Local. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 15″. (x) N A.

2. TREATMENTS :

Same as in expt. no. 54(46) on page 17.

3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) 36′×18′. (b) 30′×6′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. no lodging. (ii) Nil. (iii) Height of plants ; no. of tillers, length of ear heads and grain yield. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 822 lb./ac. (ii) 113.0 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	826	818

S.E./mean =39.95 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 55(32).**
Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the most suitable date of sowing for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) One ploughing and 1 harrowing. (b) Drilling. (c) 40 lb./ac. (d) 18″. (e) N.A. (v) 300 lb. of N as A/S+200 lb./ac. of P_2O_5. (vi) Junagadh (local). (vii) Irrigated. (viii) Three interculturings. (ix) 13.75″. (x) 20.9.1955, 28.9.1955, 6.10.1955, 14.10.1955 and 26.10.1955 according to date of sowing.

2. TREATMENTS :

5 dates of sowing : D_1=15.5.1955, D_2=1.6.1955, D_3=15.6.1955, D_4=1.7.1955 and D_5=15.7.1955.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1762 lb./ac. (ii) 181.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av yield	2339	2363	2004	1270	832

S.E./mean =81.31 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 56(32).**
Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the most suitable dates of sowing for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mug.* (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Two ploughings and 1 harrowing. (b) Drilling. (c) 40 lb./ac. (d) 18″. (e) N.A. (v) 100 lb./ac. of manure mixture at sowing+200 lb. of manure mixture top dressed. (vi) Junagadh (local) (vii) Irrigated. (viii) Two interculturings. (ix) 33.75″. (x) D_1 on 14, 17.9.1956, D_2 on 3, 7.10.1956, D_3, D_4 and D_5 on 31.10.1956.

2. TREATMENTS :

5 dates of sowing : D_1=15.5.1956, D_2=1.6.1956, D_3=15.6.1956, D_4=1.7.1956 and D_5=15.7.1956.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′ all round the plot. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Crop growth and vigour was poor due to lack of rains and non availability of canal water. (vii) Nil.

5. RESULTS :

(i) 378 lb./ac. (ii) 100.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	575	224	213	472	407

S.E./mean =44.98 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 57(36).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the most suitable dates of sowing for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann (G.M.). (c) 16 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) 300 lb./ac. of A/S applied in three equal doses at sowing, tillering and flowering. (vi) Junagadh (local). (vii) Irrigated. (viii) Nil. (ix) 15″. (x) D_1 on 27.9.1957 ; D_2 on 1.10.1957 ; D_3 on 12.10.1957 ; D_4 and D_5 on 27.10.1957.

2. TREATMENTS :

5 dates of sowing : D_1=15.5.1957, D_2=1.6.1957, D_3=15.6.1957, D_4=1.7.1957 and D_5=15.7.1957.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40′×14′. (b) 34′×7½′. (v) 3′×3¼′. (vi) Yes.

4. GENERAL :

(i) Not good in D_1 and D_3 plots due to draught in August/September. Moderate lodging in all treatments. (ii) Nil. (iii) Height of plant, no. of tillers, no. of grains per earhead, length of earhead and grain yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 885 lb./ac. (ii) 229.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	550	579	820	1115	1361

S.E./mean =102.7 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 58(26).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the most suitable dates of sowing for Paddy.

1. BASAL CONDITIONS :

(i) (a) Legume—cereal—cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) One harrowing. (b) Drilling. (c) 40 lb./ac. (d) 18″. (e) —. (v) 20 C.L./ac. of compost ; 100 lb./ac. of P_2O_5 and 300 lb./ac. of A/S. (vi) Junagadh (local). (vii) Irrigated. (viii) Two weedings and 1 interculturing. (ix) 13″. (x) 25.9.1958 to 29.10.1958.

2. TREATMENTS :

5 dates of sowing : D_1=15.5.1958, D_2=1.6.1958, D_3=15.6.1958, D_4=1.7.1958 and D_5=15.7.1958.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40′×14′. (b) 34′×7½′. (v) 3′×3.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) As the plan of the expt. is not available, the expt. is analysed as R.B.D.

5. RESULTS :

(i) 1486 lb./ac. (ii) 231.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	1475	1373	2192	1359	1033

S.E./mean =103.5 lb./ac.

Crop :- Paddy. *(Kharif).* **Ref :- Gj. 56(118).**

Site :- Agri. Res. Stn., Jamnagar. **Type :- 'C'.**

Object .—To compare different methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) to (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 19.7.1956. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 29.03″. (x) 2.12.1956.

2. TREATMENTS :

1. Transplanting one month old seedlings with 9″×9″ spacing.
2. Drilling paddy with rows 9″ apart and thinning to 9″ spacing between plants.
3. Drilling paddy with rows 9″ apart without thinning (Local practice).

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a), (b) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) N.A. (c) Nil. (v) N.A. (vi) Nil. (vii) Plot-wise data is not available.

5. RESULTS :

(i) 2039 lb./ac. (ii) N.A, (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	2374	2167	1575

S.E./mean =N.A.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 56(45).**

Site :- Central Exptl. Farm, Junagadh. **Type :- 'C'.**

Object :—To find out the economic spacing and seed rate for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar.* (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 27.6.1956. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) Between rows as per treatments. Between plants—irregular. (v) Farm compost at 10 C.L./ac. and 30 lb./ac. of N as paddy mixtures in three doses. (vi) M.S. 3 (Bhimdi type ; medium). (vii) Irrigated. (viii) Two weedings and 4 intercultures (ix) 59·56″. (x) 14 and 21.10.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings between rows : $R_1=9''$, $R_2=18''$ and $R_3=18''$ double rows.

(2) 3 seed rates : $S_1=20$, $S_2=40$ and $S_3=60$ lb./ac.

Double rows—two rows were sown side by side keeping 15″ spacing between two inner rows.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) and (b) N.A. (iii) 4. (iv) (a) 15′×9′. (b) 10′×6′. (v) 2½′×1½′. (vii) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of paddy blast ; No control measures. (iii) Height, spread and grain yield. (iv) (a) 1956—contd. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1605 lb./ac. (ii) 355.7 lb./ac. (iii) R effect alone is significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	Mean
S_1	1720	1491	1401	1537
S_2	1978	1324	1591	1631
S_3	1945	1467	1530	1647
Mean	1881	1427	1507	1605

S.E. of any marginal mean =102.7 lb./ac.
S.E. of body of table =177.9 lb./ac.

Crop :- Paddy. *(Kharif).* **Ref :- Gj. 57(53).**
Site :- Central Exptl. Farm, Junagadh. **Type :-'C'.**

Object :—To find out the optimum spacing and seed rate for drilled Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 15.6.1957. (iv) (a) One ploughing and 2 harrowings. (b) Drilling. (c) As per treatments. (d) Between rows—as per treatments; between plants—irregular. (e) —. (v) F.C. at 20 C.L./ac. (vi) S—29 (medium). (vii) Irrigated. (viii) Two weedings and 3 intercultures. (ix) 30.21″. (x) 10, 11.10.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 spacings between rows : $R_1=9''$, $R_2=12''$, $R_3=15''$ and $R_4=18''$.

(2) 3 seed rates : $S_1=20$, $S_2=30$ and $S_3=40$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 20′×15′. (b) 16′×12′ for R_1, R_2 and R_4 and 16′×12½′ for R_3. (v) 2′×1½′ for R_1, R_2 and R_4 and 2′×1¼′ for R_3. (vi) Yes.

4. GENERAL.

(i) Satisfactory. (ii) Attack of Paddy blast; control measures N.A. (iii) Grain yield. (iv) (a) 1956-contd. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2117 lb./ac. (ii) 195.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	1978	2062	2052	2006	2025
S_2	2152	2020	2195	2298	2166
S_3	2002	2386	2219	2034	2160
Mean	2044	2156	2155	2113	2117

S.E. of R marginal means =56.33 lb./ac.
S.E. of S marginal means =48.79 lb./ac.
S.E. of body of table =97.58 lb./ac.

Crop :- Paddy *(Kharif).* **Ref :- Gj. 54 (100).**
Site :- Agri. Res. Stn., Porbandar. **Type :- 'C'.**

Object :—To compare different methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium. (b) N.A. (iii) 24.6.1954. (iv) (a) One ploughing and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Local (medium). (vii) Irrigated. (viii) Three weedings and 2 intercultures. (ix) N.A. (x) 13.10.54.

2. TREATMENTS :

1. Local method of sowing.
2. Improved method of sowing. (drilling).
3. Improved method of sowing (transplanting).

Other details-N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 13′×9′. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Grain yield. (iv) (a) 1954-1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot wise yield is not available.

5. RESULTS :

(i) 1932 lb./ac. (ii) N.A. (iii) N.A. (iv) Av. yield of grain in lb./ac.

Treatment	1.	2.	3.
Av. yield	1492	2430	1875

S.E./mean =N.A.

Crop :- Paddy *(Kharif).* **Ref :- Gj. 57(114).**
Site :- Agri. Res. Stn., Umrala. **Type :- 'CV'.**

Object :—To find out the optimum seed rate for different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 20.6.1957. (iv) (a) N.A. (b) Hand sowing. (c) As per treatments. (d) 18″ between rows. (e) N.A. (v) 20 lb./ac. of N as A/S. (vi) As per treatments. (vii) Irrigated. (viii) Three weedings and 1 interculturing. (ix) 34″. (x) 9.11.1957.

2. TREATMENTS :

4 varieties : V_1=S—57, V_2=S—152, V_3=S—309 and V_4=local.
4 seed rates : S_1=15, S_2=20, S_3=25 and S_4=30 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12′×18′. (b) 9′×15′. (vi) 1.5′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 943 lb./ac. (ii) (a) 156.6 lb./ac. (b) 129.7 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean
V_1	901	715	907	870	848
V_2	609	553	719	533	604
V_3	1391	1487	786	1158	1205
V_4	1341	1108	947	1058	1113
Mean	1060	966	840	905	943

S.E. of difference of two

1. V marginal means	=39.2 lb./ac.
2. S marginal means	=32.4 lb./ac.
3. S means at the same level of V	=91.7 lb./ac.
4. V means at the same level of S	=96.8 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59(66).**

Site :- Trial-cum-Demonstration Farm, Bardoli. **Type :- 'CM'.**

Object :—To study the effects of graded doses of N, P and K with different spacings on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—*wal*, sann—paddy. (b) Paddy. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Deep black. (b) Refer soil analysis, Bardoli. (iii) 21, 22.7.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) Between plants 6″ and between rows : as per treatments. (e) 2 to 3. (v) Nil. (vi) Z—31. (vii) Irrigated. (viii) Two interculturings and 3 weedings. (ix) 100″. (x) 10.11.1959.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)
(1) 3 levels of N : $N_0=0$, $N_1=40$ and $N_2=80$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=40$ and $P_2=80$ lb./ac.
(3) 3 levels of K_2O : $K_0=0$, $K_1=40$ and $K_2=80$ lb./ac.
(4) 3 spacings between rows : $R_1=6''$, $R_2=9''$ and $R_3=12''$.
Manuring on 21.7.1959, 20.8.1959, and 1.10.1959.

3. DESIGN :

(i) 3^4 confounded. (ii) (a) 9 plots/block ; 9 blocks/rep. (b) N.A. (iii) 1. (iv) (a) 18′×24′. (b) 12′×21′. (v) 3′×1.5′. (vi) Yes.

4. GENERAL :

(i) Due to heavy rains, the growth was hampered to some extent. (ii) Nil. (iii) Grain and fodder yield (iv) (a) 1956—contd. (b)—. (c) Nil. (v) (a) Chikhli. (b) Nil. (vi) Heavy rains. (vii) Nil.

5. RESULTS :

(i) 2513 lb./ac. (ii) 274.9 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean	R_1	R_2	R_3
N_0	1609	1593	1555	1543	1625	1590	1586	1585	1537	1635
N_1	2827	2855	2768	2780	2892	2778	2817	2821	2912	2717
N_2	3115	3237	3056	3219	3054	3135	3136	3049	3144	3216
Mean	2517	2562	2459	2514	2523	2501	2513	2485	2531	2522
R_1	2443	2488	2524	2512	2491	2452				
R_2	2547	2546	2499	2526	2624	2443				
R_3	2561	2652	2355	2505	2455	2607				
K_0	2495	2545	2505							
K_1	2490	2544	2536							
K_2	2566	2598	2338							

S.E. of any marginal mean =52.9 lb./ac.
S.E. of body of any table =91.6 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59(85).**

Site :- Trial-cum-Demonstration Farm, Chikhli. Type :- 'CM'.

Object :—To study the effect of graded doses of N, P, K and different spacings on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Deep black. (b) N.A. (iii) 2.8.1959 and 14.8.1959. (iv) (a) N.A. (b) Transplanting. (c) —. (d) Between plants : 6″ ; between rows : as per treatments. (e) N.A. (v) Nil. (vi) Z-31. (vii) Unirrigated. (viii) Two hand weedings. (ix) 104.9″. (x) 11.11.1959 to 14.11.1959.

2. TREATMENTS :

Same as in expt. no. 59(66) on page 24.

3. DESIGN :

(i) 3^4 confounded. (ii) (a) 9 plots/block ; 9 blocks/rep. (b) 72′×54′. (iii) 1. (iv) (a) 24′×18′. (b) 18′×12′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Crop was lodged due to heavy rains in Oct. 1959. The plants in some of the plots were dead. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1959—contd. (b) —. (c) Nil. (v) (a) Bardoli. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1628 lb./ac. (ii) 715.7 lb./ac. (iii) Effect of N alone is highly significant. (iv) Av. yeild of grain in lb./ac.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean	R_1	R_2	R_3
N_0	1748	2219	2011	1776	2129	2073	1993	1989	2090	1900
N_1	1706	1821	1552	1765	1597	1717	1693	1690	1642	1748
N_2	1244	1121	1233	1294	1524	779	1199	964	1261	1373
Mean	1566	1720	1599	1612	1750	1523	1628	1547	1664	1673
R_1	1157	1737	1748	1434	2006	1202				
R_2	1619	1686	1686	1642	1647	1703				
R_3	1922	1737	1361	1759	1597	1664				
K_0	1698	1546	1591							
K_1	1804	1776	1670							
K_2	1196	1838	1535							

S.E. of any marginal mean =137.7 lb./ac.
S.E. of body of any table =238.6 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 59(116).**
Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To compare different methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Black. (b) Refer soil analysis, Dabhoi. (iii) 8.8.1959. (iv) (a) Two harrowings. (b) Transplanting. (c) to (e) As per treatments. (v) Nil. (vi) K-42. (vii) Irrigated. (viii) Two weedings. (ix) N.A. (x) 25.10.1959.

2. TREATMENTS :

Method	Spacing	Seedrate	Nursery Manuring	No. of seedlings/hill	Field Manuring
1. Chinese	6″×6″	16 lb./ac.	1340 lb./ac. of F.Y.M.	2	40 lb./ac. of F.Y.M., 100 lb./ac. of N, 40 lb./ac. of P_2O_5 and K_2O each.
2. Japanese	9″×9″	5 lb./ac.	1 C.L./ac. of F.Y.M.+15 lb./ac. of N	1	10 C.L./ac. of F.Y.M., 100 lb./ac. of N, 80 lb./ac. of P_2O_5.
3. Departmental	6″×6″	7 lb./ac.	1 C.L./ac. of F.Y.M.+8 lb./ac. of N	8	10 C.L./ac. of F.Y.M., 60 lb./ac. of N, 30 lb./ac. of P_2O_5.
4. Local	—	10 lb./ac.	4 C.L./ac. of F.Y.M.	Irregular	Nil

N applied as A/S, P_2O_5 as Super and K_2O as Pot. Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 30′×30′. (b) 24′×24′. (v) 3′×3′. (vi) Yes.

4 GENERAL :

(i) Normal. (ii) Treatments 1 and 2 were heavily affected by swarming caterpillars. (iii) Grain yield. (iv) (a) No. (b) and (c) —. (v) N.A. (vi) Nil. (vii) Plot yield of treatment 2 in repl. II was missing.

5. RESULTS :

(i) 809 lb./ac. (ii) 218.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	906	658	870	803

S.E./mean (except tr. 1) =125.9 lb./ac.

Crop :- Paddy ***(Kharif).*** **Ref :- Gj. 57(13).**
Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To find out suitable spacing and manurial dose for early Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 28 to 30.8.1957. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 3 to 4. (v) 5 C.L./ac. of F.Y.M. (vi) E.K. 70. (vii) Irrigated. (viii) N.A. (ix) 56.95″. (x) 21 to 22.11.1957.

2. TREATMENTS :

Main-plot treatments

4 spacings : $S_1=6''\times6''$, $S_2=12''\times6''$, $S_3=10''\times10''$ and $S_4=12''\times12''$.

Sub-plot treatments

5 doses of manures : $M_0=0$, $M_1=30$, $M_2=60$, $M_3=90$ lb./ac. of N and $M_4=60$ lb./ac. of N+30 lb./ac. of P_2O_5.

N as A/S broadcasted in two equal doses on 29.8.1959 and 29.9.1959.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20′×20′. (b) 15′×15′. (v) 2.5′ all round the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (The experiment failed in 1956). (b) Yes. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2930 lb./ac. (ii) (a) 371.6 lb./ac. (b) 347.6 lb./ac. (iii) M effect alone is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean
M_0	3407	2962	2848	2584	2950
M_1	3325	3223	3310	3163	3256
M_2	2880	3257	3015	2994	3036
M_3	2716	3054	2817	2672	2815
M_4	2479	2448	2684	2764	2594
Mean	2961	2989	2935	2835	2930

S.E. of difference of two

1. S marginal means	=117.5 lb./ac.
2. M marginal means	=122.9 lb./ac.
3. M means at the same level of S	=245.9 lb./ac.
4. S means at the same level of M	=249.4 lb./ac.

Crop :- Paddy *(Kharif).* **Ref :- Gj. 58(6).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'**

Object :—To find out suitable spacing and manurial dose for early Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (ii) Refer soil analysis, Dabhoi. (iii) 27.6.1958/14 and 16 to 18.8.1958. (iv) (a) Four ploughings and 2 harrowings. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 3 to 4. (v) 5 C.L./ac. of F.Y.M. (vi) E.K-70. (vii) Irrigated. (viii) One interculturing. (ix) 57″. (x) 1 to 4.11.1958.

2. TREATMENTS :

Same as in Expt. no. 57(13) on page 26.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20′×20′. (b) 15′×15′. (v) 2.5′ all round the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of stem-borer. (iii) Tillering, grain and fodder yield. (iv) (a) 1956—contd. (The experiment failed in 1956). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2405 lb./ac. (ii) (a) 485.2 lb./ac. (b) 277.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean
M_0	2639	2016	2224	2160	2260
M_1	2540	2206	2195	2260	2300
M_2	2690	2185	2509	2318	2425
M_3	2595	2150	2489	2578	2453
M_4	2921	2430	2547	2444	2585
Mean	2677	2197	2393	2352	2405

S.E. of difference of two

1. S marginal means	=153.4 lb./ac.
2. M marginal means	= 98.1 lb./ac.
3. M means at the same level of S	=196.6 lb./ac.
4. S means at the same level of M	=233.3 lb./ac.

Crop :- Paddy *(Kharif).* **Ref :- Gj. 59(59).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To find out suitable spacing and manurial dose for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 18.6.1959/23.8.1959. (iv) (a) Three ploughings and 3 harrowings. (b) Transplanting. (c) —. (d) As per treatments. (e) N.A. (v) 8 C.L./ac. of F.Y.M. (vi) E.K-70. (viii) Unirrigated. (viii) Three interculturings. ix) 56.98″. (x) 12.11.1959.

2. TREATMENTS :

Same as in Expt. no. 57 (13)on page 26.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20′×20′. (b) 15′×15′. (v) 2.5′ all round the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1703 lb./ac. (ii) (a) 607.7 lb./ac. (b) 454.8 lb./ac. (iii) S and M effects are highly significant. Interaction is not significant. (iv) Av. yields of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean
M_0	1385	1146	1167	914	1153
M_1	2219	1572	1660	1679	1782
M_2	2272	1666	1384	1531	1713
M_3	2706	1961	2041	1511	2055
M_4	2320	1868	1687	1386	1815
Mean	2180	1642	1588	1404	1703

S.E. of difference of two.

1. S marginal means	=192.2 lb./ac.
2. M marginal means	=160.8 lb./ac.
3. M means at the same level of S	=321.6 lb./ac.
4. S means at the same level of M	=346.0 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 54(29).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To find out the optimum spacing, manurial requirements and intercultures for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Medium black soil. (b) Refer soil analysis, Dabhoi. (iii) 23 and 25.7.1954. (iv) (a) N.A. (b) As per treatments. (c) 60 lb./ac. fcr drilling. (d) As per treatments. (e) 6 seeds/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) E.K. 70. (vii) Unirrigated. (viii) Two weedings. (xi) 41.92″. (x) 6.11.54.

2. TREATMENTS:

Treatment No.	Method of sowing	Spacing	N in lb./ac.	P_2O_5 in lb./ac	No. of intercultures
1.	Drilling	15″	64	32	3 one way
2.	Drilling	15″	100	80	3 one way
3.	Drilling	12″	64	32	3 one way
4.	Drilling	12″	100	80	3 one way
5.	Dibbling	9″×9″	64	32	3 one way
6.	Dibbling	9″×9″	100	80	3 one way
7.	Dibbling	9″×9″	64	32	3 two ways
8.	Dibbling	9″×9″	100	80	3 two ways
9.	Drilling	15″	64	32	5 one way
10.	Drilling	15″	100	80	5 one way
11.	Drilling	12″	64	32	5 one way
12.	Drilling	12″	100	80	5 one way
13.	Dibbling	9″×9″	64	32	5 one way
14.	Dibbling	9″×9″	100	80	5 one way
15.	Dibbling	9″×9″	64	32	5 two ways
16.	Dibbling	9″×9″	100	80	5 one ways

N given as A/S in three equal doses on 23.7.1954, 27.8.1954. and 29.9.1954. P_2O_5 given as Super on 23.7.1954.

Due to unfavourable wapsa conditions only one interculture could be given to all plots instead of 3 and 5 as per treatments. Hence effective no. of treatments is 8 only.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 3 (Expt. was originally planned with 4 rep. but as most of the plots in repl. III were situated in poor soil, hence replication III has been dropped from analysis). (iv) (a) 15′×33′. (b) 9′×30′ for 9″×9″ and 12″ spacing ; 10′×27′ for 15″ spacing. (v) 9″×9″ spacing : 4 rows on each side and 1½′ at each end; 12″ spacing : 3 rows on each side and 1½′ at each end and 15″ spacing : 2 rows on each side and 3′ at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, no. of tillers and grain yield. (iv) (a) 1954-1955. (b) No. (c) Nil. (v) (a) Amreli. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1291 lb./ac. (ii) 204.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8
Av. yield	1466	1110	1459	1651	1210	1055	1291	1089

S.E./mean =83.6 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 55 (16).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To find out the optimum spacing, manurial requirements and intercultures for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Dabhoi. (iii) 30.6.1955. (iv) (a) N.A. (b) As per treatments. (c) 60 lb./ac. for drilled paddy. (d) As per treatments. (e) 6 seeds/dibble. (v) 5 C.L./ac. of F.Y.M. on 29.5.1955. (vi) E.K.-70. (vii) Irrigated. (viii) Two weedings. (ix) 51.18″. (x) 28.10.1955.

2. TREATMENTS :

Same as in Expt. no. 54(29) on page 29.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 15′×33′. (b) 9′×30′ for 9″×9″ and 12″ spaced plots ; 10′×27′ for 15″ spaced plots. (v) Same as in Expt. no. 54(29) on page 29. (vi) Yes.

4. GENERAL :

(i) Lodging in the whole experiment due to heavy rains at flowering. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) (a) Amreli. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2114 lb./ac. (ii) 375.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8
Av. yield	2205	1911	2191	1791	2367	2002	2593	1850

S.E./mean =132.9 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 57 (123).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To compare different methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann for G.M. (c) 16 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 6 and 10.7.1957. (iv) (a) Nil. (b) As per treatments. (c) 40 lb./ac. for drilled paddy and 15 lb./ac. for transplanted paddy. (d) 18″×3′4″. (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Three intercultures and 4 weedings. (ix) 15.09″. (x) 14 and 20.10.1957.

2. TREATMENTS :

4 methods of cultivation : C_1=Local, drilling, without fertilizers, C_2=Japanese, drilling, with fertilizers, C_3=Japanese, transplanting, with 320 lb./ac. manure mixture+50 lb./ac. A/S+375 lb./ac. Super and C_4=Wave shaped, transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 36′×10′. (b) 30′×6′. (v) 3′×2′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) As plot-wise yield data is not available, statistical analysis could not be carried out.

5. RESULTS :

(i) 2231 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	1229	2700	2534	2460

S.E./mean =N.A.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 58(113).**

Site :- Agri. Res. Stn., Junagadh. **Type :- 'CM'.**

Object :—To study the effect of spacing, seed rate and date of sowing along with N and P_2O_5 on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut and gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) As per treatments. (iv) (a) Nil. (b) Drilling. (c) and (d) As per treatments. (e)—. (v) 15 C.L./ac. of F.Y.M. (vi) S-29. (vii) Irrigated. (viii) N.A. (ix) 33.27". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 dates of sowing : D_1=5.6.1958, D_2=15.6.1958 and D_3=25.6.1958.
(2) 3 spacings between rows : S_1=9", S_2=12" and S_3=18".
(3) 3 seed rates : R_1=20, R_2=30 and R_3=40 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N_0=0 and N_1=40 lb./ac.
(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=30 lb./ac.

3. DESIGN :

(i) $3^3 \times 4$ confounded in split-plot. (ii) (a) 3 blocks/replication, 9 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 22'×15'. (b) 18'×12'. (v) 2'×1.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1229 lb./ac. (ii) (a) 120.2 lb./ac. (b) 148.6 lb./ac. (iii) Effect of D, N, P and interaction D×N are highly significant. Interaction D×R is significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	R_1	R_2	R_3	S_1	S_2	S_3	P_0	P_1	Mean
N_0	1047	981	850	935	991	953	931	964	984	913	1006	960
N_1	1729	1420	1348	1463	1536	1496	1450	1538	1507	1467	1531	1498
Mean	1388	1200	1099	1199	1264	1224	1191	1251	1245	1190	1268	1229
P_0	1306	1180	1084	1156	1221	1193	1148	1228	1194			
P_1	1469	1221	1115	1243	1306	1256	1233	1274	1297			
S_1	1370	1149	1053	1142	1264	1167						
S_2	1438	1202	1113	1197	1280	1276						
S_3	1356	1250	1131	1259	1247	1230						
R_1	1282	1151	1165									
R_2	1433	1267	1091									
R_3	1448	1183	1042									

S.E. of difference of two

1.	D, S or R marginal means	=28.3 lb./ac.
2.	N or P marginal means	=28.6 lb./ac.
3.	N or P means at the same level of D, S or R	=49.5 lb./ac.
4.	D, S or R marginal means at the same level of N or P	=45.0 lb./ac.
	S.E. of body of D×S, D×R or R×S tables	=34.7 lb./ac.
	S.E. of body of N×P tables	=28.6 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59(129).**

Site :- Agri. Res. Stn., Junagadh. **Type :- 'CM'.**

Object :—To study the effect of spacing, seed rate and date of sowing along with N and P_2O_5 on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e)—. (v) 15 C.L./ac. of F.Y.M. (vi) S-29. (vii) Irrigated. (viii) Nil. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :
All combinations of (1), (2) and (3)
(1) 3 dates of sowing : D_1=5.6.1959, D_2=15.6.1959 and D_3=25.6.1959.
(2) and (3) same as in Expt. no. 58(113) on page 30.
Sub-plot treatments :
Same as in Expt. no. 58(113) on page 30.

3. DESIGN :

(i) $3^3 \times 4$ confounded in split-plot. (ii) (a) 3 blocks/replication, 9 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 22′×15′. (b) 18′×12′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1401 lb./ac. (ii) (a) 448.7 lb./ac. (b) 270.6 lb./ac. (iii) Main effect of N is highly significant. Interactions D×N and D×P are significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	R_1	R_2	R_3	S_1	S_2	S_3	P_0	P_1	Mean
N_0	1286	1221	914	1101	1124	1196	1231	1129	1060	1135	1146	1140
N_1	1611	1858	1514	1714	1511	1757	1640	1755	1588	1591	1731	1661
Mean	1448	1539	1214	1408	1317	1477	1436	1442	1324	1363	1438	1401
P_0	1405	1590	1095	1387	1255	1448	1385	1372	1331			
P_1	1492	1489	1333	1428	1380	1506	1486	1512	1316			
S_1	1465	1447	1395	1423	1350	1534						
S_2	1553	1617	1156	1533	1266	1527						
S_3	1327	1554	1091	1267	1335	1369						
R_1	1571	1541	1111									
R_2	1416	1419	1117									
R_3	1358	1658	1414									

S.E. of difference of two

1.	D, S or R marginal means	=105.8 lb./ac.
2.	N or P marginal means	= 52.1 lb./ac.
3.	N or P means at the same level of D, S or R	= 90.2 lb./ac.
4.	D, S or R means at the same level of N or P	=123.5 lb./ac.
	S.E. of body of D×S, D×R or R×S tables	=129.5 lb./ac.
	S.E. of body of N×P table	= 52.1 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 59 (109).**

Site :- Agri. Res. Stn., Junagadh. **Type :- 'CM'.**

Object :—To compare different methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Vegetables. (c) N at 40 lb./ac. and P_2O_5 at 40 lb./ac. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 1.7.1959. (iv) (a) Two ploughings and 2 harrowings. (b) As per treatments. (c) N.A. (d) As per treatments. (e) —. (v) Nil. (vi) S-29. (vii) Irrigated. (viii) Three interculturings. (ix) 60.42″. (x) 10.11.1959.

2. TREATMENTS :

4 methods of cultivation : C_1=Chinese with 6″×6″ spacing, C_2=Departmental with 18″ spacing, C_3= Japanese with 9″×9″ spacing and C_4=Local with 9″ spacing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 72′×72′. (iii) 6. (iv) (a) 36′×36′. (b) 30′×30′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Blast disease. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 896 lb./ac. (ii) 226 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C_1	C_2	C_3	C_4
Av. yield	889	1012	851	831

S.E./mean =92.26 lb./ac.

Crop :- Paddy. **Ref :- Gj. 54(60).**

Site :- Agri. Res. Stn., Navagam. **Type :- 'CM'.**

Object :—To assess the relative merits of Japanese, departmental and local methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black soil. (b) Refer soil analysis, Navagam. (iii) 30.6.1954/27.7.1954. (iv) (a) Two ploughings in dry condition and puddling. (b) to (e) N.A. (v) As per treatments. (vi) Sukhevel 20 (early). (vii) Irrigated. (viii) One hand weeding. (ix) 35″. (x) 20.10.1954.

2. TREATMENTS :

Treatment	Nursery	Field	Spacing	Seedlings/hole
1. Japanese method	Raised seed bed, manuring by 1 C.L./guntha of F.Y.M.+16 lb./guntha of A/S+16 lb./guntha of Super.	5 C.L./ac. of F.Y.M. +G.M.+100 lb./ac. of N as A/S+80 lb./ac. of P_2O_5 as Super. (Top dressing in 3 doses)	9″×9″	1
2. Departmental method	Flat seed bed, manuring by 1 C.L./guntha of F.Y.M.+8 lb./guntha of A/S.	5 C.L./ac. of F.Y.M. +G.M.+64 lb./ac. of N as A/S+32 lb./ac. of P_2O_5 as Super. (Top dressing in 3 doses)	10″×10″	1
3. Local method	Flat seed bed, manuring with 1 C.L./guntha of F.Y.M.	10 C.L./ac. of F.Y.M. +37 lb./ac. of N as A/S +22 lb./ac. of G.M. (applied in one dose)	Irregular	1

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 22′-6″×22′-6″. (b) 15′×15′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Mild attack of paddy jassids and paddy stem-borers. (iii) Grain yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The 3rd dose of manure could not be given as it rained continuously up to the middle of September, 1954. After that it was too late to apply manures.

5. RESULTS :

(i) 3278 lb./ac. (ii) 294.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	3674	3090	3069

S.E./mean =104.0 lb./ac.

Crop :- Paddy. **Ref :- Gj. 54(59).**

Site :- Agri. Res. Stn., Navagam. **Type :- 'CM'.**

Object :—To compare the Japanese and the departmental methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black soil. (b) Refer soil analysis, Navagam. (iii) 30.6.1954/27.7.1954. (iv) (a) to (e) N.A. (v) 1 C.L./ac. of F.Y.M. for seed-bed and 5 C.L/ac. of F.Y.M. in the field. (vi) Jirasal 274 (late). (vii) Irrigated. (viii) One hand weeding and 3 interculturings. (ix) 35.43″. (x) 14.11.1954.

2. TREATMENTS :

All combinations of the following 5 factors each at two levels.

Departmental	Japanese
A_0=Flat seed bed	A_1=Raised seed bed
B_0=Manuring of seed bed : 1 C.L./ac. of F.Y.M.+8 lb./guntha of A/S.	B_1=1 C.L./ac. of F.Y.M.+16 lb./guntha of A/S +16 lb./guntha of P_2O_5+layer of ash.
C_0=Spacing between bunches : 10″×10″.	C_1=Spacing between bunches : 9″×9″.
D_0=Manuring of field : 5 C.L./ac. of F.Y.M. +G.M.+64 lb./ac. of N as A/S+32 lb./ac. of P_2O_5 as Super.	D_1=5 C.L./ac. of F.Y.M.+G.M.+100 lb./ac. of N as A/S+80 lb./ac. of P_2O_5 as Super.
E_0=One hand weeding.	E_1=One hand weeding+3 interculturings.

3. DESIGN :

(i) 2^5 with BCDE, ABC and ADE effects confounded. (ii) (a) 32. (b) N.A. (iii) 2. (iv) (a) For 9″×9″ spacing : 10′—6″×33′, for 10″×10″ spacing : 10′—10″×33′—4″. (b) 7′—6″×30′ for both spacings. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Heavy lodging in 2nd week of October, 1954. (ii) Nil ; gammexane dusted as precautionary measure (iii) Straw yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Vyara. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2949 lb./ac. (ii) 524.0 lb./ac. (iii) Effect of C is highly significant. Interactions AB and AD are significant. Other effects are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	A		B		C		D		E	
		—	+	—	+	—	+	—	+	—	+
A	−6	—	—	−194	182	−106	94	−200	188	33	−45
B	68	−120	256	—	—	46	90	79	57	−11	147
C	−669	−769	−569	−691	−647	—	—	−727	−611	−655	−683
D	87	−107	281	98	76	29	145	—	—	168	6
E	−90	−51	−129	−169	−11	−76	−104	−9	−171	—	—

S.E. of mean response =131.0 lb./ac.
S.E. of differential response =185.2 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 58(106).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To ascertain the optimum time of sowing, spacing, seed rate and N and P doses for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) One ploughing and one harrowing. (b) Drilling. (c) and (d) As per treatments. (e) —. (v) Nil. (vi) S-29. (vii) Irrrigated. (viii) Three weedings. (ix) N.A. (x) 19.10.1958.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 dates of sowing : D_1=20.6.1958, D_2=27.6.1958 and D_3=4.7.1958.

(2) and (3) same as in expt. no. 58 (113) on page 30.

Sub-plot treatments :

Same as in Expt. no. 58 (113) on page 30.

N and P applied in furrows on 1.9.1958.

3. DESIGN :

(i) $3^3 \times 2^2$ split-plot. (ii) (a) 27 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) One. (iv) (a) 18′×24′. (b) 12′×18′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (not conducted in 1959). (b) No. (c) Nil. (v) (a) Chikhali. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1315 lb./ac. (ii) (a) 457.2 lb./ac. (b) 279.1 lb./ac. (iii) Effects of N, D and D×R are highly significant. Interactions D×N, D×R and R×S are significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	R_1	R_2	R_3	S_1	S_2	S_3	P_0	P_1	Mean
N_0	704	1799	996	1131	1073	1295	1102	1284	1114	1184	1149	1166
N_1	782	2184	1424	1361	1831	1199	1480	1216	1694	1450	1477	1463
Mean	743	1992	1210	1246	1452	1247	1291	1250	1404	1317	1313	1315
P_0	680	1960	1311	1272	1300	1379	1262	1445	1244			
P_1	806	2024	1109	1220	1604	1115	1320	1055	1564			
S_1	803	2075	994	1292	1492	1088						
S_2	403	2034	1312	1396	1140	1214						
S_3	1022	1866	1324	1048	1724	1441						
R_1	443	1762	1532									
R_2	939	2315	1102									
R_3	847	1898	997									

S.E. of difference of two

1. D, S or R marginal means	=107.8 lb./ac.
2. N or P marginal means	= 53.7 lb./ac.
3. N or P means at the same level of D, S or R	= 93.0 lb./ac.
4. D, S or R means at the same level of N or P	=126.3 lb./ac.
S.E. of body of D×S, D×R or R×P tables	=132.0 lb./ac.
S.E. of body of N×P table	= 53.7 lb./ac.

Crop :- Paddy. **Ref :- Gj. 54(76).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To compare the Japanese and departmental methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 20 lb./ac. of N as A/S and G.N.C. (ii) (a) Black soil. (b) N.A. (iii) 11.6.1954/7.7.1954. (iv) (a) N.A. (b) As per treatments. (c)—. (d) and (e) As per treatments. (v) N.A. (vi) Z-31 (early). (vii) Unirrigated. (viii) Two weedings and 3 interculturings. (ix) 81.14". (x) 29.10.1954.

2. TREATMENTS :

Departmental	Japanese
A_0=Flat seed bed	A_1=Raised seed bed
B_0=Manuring of seed bed : 1 C.L. of F.Y.M.+ 8 lb./guntha of A/S	B_1=1 C.L. of F.Y.M.+16 lb./guntha of A/S+16 lb./guntha of Super+layer of ash.
C_0=Manuring of field : 5 C.L. of F.Y.M.+ G.M.+64 lb./ac. of N as A/S+32 lb./ac. of P_2O_5 as Super	C_1=5 C.L./ac of F.Y.M.+G.M.+100 lb./ac. of N as A/S+80 lb./ac. of P_2O_5
D_0=Spacing between bunches=10"×10"	D_1=Spacing between bunches=9"×9"
E_0=8 seedlings/bunch	E_1=4 seedlings/bunch
F_0=One hand weeding and no interculturing	F_1=One hand weeding and 3 interculturings

3. DESIGN :

(i) 2^6 confounded factorial. (ii) (a) 64. (b) N.A. (iii) 1. (iv) (a) For 9"×9" spacing : 10'-6"×33' and for 10"×10" spacing : 10'-10"×33'-4". (b) 7.5'×30' for all spacings. (v) 4 rows all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. Lodging due to heavy rains. (ii) Mild attack of jassid hoppers. (iii) Fodder and grain yield. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) (a) Navagam. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2353 lb./ac. (ii) 249.6 lb./ac. (iii) Main effect of D and interactions AC and CE are highly significant. Other effects are not significant. (iv) Mean and differential response in lb./ac.

Differential response

	Mean response	A		B		C		D		E		F	
		−	+	−	+	−	+	−	+	−	+	−	+
A	61	—	—	36	86	248	−126	−15	137	16	106	175	− 53
B	−53	−78	− 28	—	—	−79	− 28	− 3	−103	−28	− 78	61	−167
C	−111	76	−298	−136	−85	—	—	49	−173	−308	86	−74	−148
D	−226	−302	−150	−176	−276	−163	−289	—	—	−296	−156	−249	−203
E	−4	− 49	41	21	−29	−201	193	−74	66	—	—	42	− 50
F	18	132	− 96	112	−76	55	− 19	−5	41	64	−28	—	—

S.E. of mean response =44.12 lb./ac.

S.E. of differential response =62.39 lb./ac.

Crop :- Paddy. **Ref :- Gj. 54(77).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To compare the Japanese and departmental methods of Paddy cultivation with the local method.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 50 lb./ac. of A/S and 20 lb./ac. of N as G.N.C. (ii) (a) Black soil. (b) N.A. (iii) 10.6.1954/11.7.1954. (iv) (a) and (b) N.A. (c) 15 lb./ac. (d) and (e) N.A. (v) N.A. (vi) Z-31. (vii) No. (viii) One weeding. (ix) 81". (x) 29.10.1954.

2. TREATMENTS

Three methods of raising seedlings : S_1=Japanese, S_2=departmental and S_3=local.
S_1 plots received 100 lb./ac. of P_2O_5 and 100 lb./ac. of N, S_2 plots received 32 lb./ac. of P_2O_5 and 64 lb./ac. of N and S_3 plots received 40 lb./ac. of N alone. N applied as A/S and P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) For 9″×9″ spacing : 14′-3″×33′, for 10″×10″ spacing 15′-10″×30′ and for 9″×9″ spacing : 14′-3″×33′. (b) 11′-3″×30′, 11′-6″×30 and 11′-3″×30′. (v) 4 rows round each net plot. (vi) Yes.

4. GENERAL :

(i) Lodging in S_1 and S_2 plots. (ii) Mild attack of jassid hoppers at an early stage. (iii) Fodder and grain yield. (iv) (a) No. (b)—. (c) Nil. (v) (a) Navagam. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2672 lb./ac. (ii) 481.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3
Av. yield	2742	3087	2188

S.E./mean=170.3 lb./ac.

Crop :-Paddy *(Kharif)*. **Ref :- Gj. 55(91)**
Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To compare the Japanese, departmental and local methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) G.M.+5 C.L. of F.Y.M.+30 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 21, 24.6.1955/29.7.1955. (iv) (a) N.A. (b) As per treatments. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) Z-31. (vii) Irrigated. (viii) As per treatments. (ix) 77.97″. (x) 9.11.1955.

2. TREATMENTS :

Method	Seed bed	Spacing	Seed rate	Seedlings/bunch	Intercultures	Weeding
1. Japanese (1)	Raised	10″×10″	15 lb./ac.	4	2	1
2. Departmental	Flat	9″×9″	30 lb./ac.	8	Nil	1
3. Local	Flat	6″×6″	40 lb./ac.	6—8	Nil	2
4. Japanese (2)	Raised	10″×10″	15 lb./ac.	4	Nil	2

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 15′×35′. (b) 7.5′×30′. (v) 3.75′×2.50′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Heavy lodging due to heavy rains at harvest time. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1954—1955 (modified in 1955). (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1924 lb./ac. (ii) 206.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatments	1	2	3	4
Av. yield	1879	2223	1692	1903

S.E./mean=153.1 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 55(65).**
Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To compare the Japanese, local and departmental methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Light reddish soil. (b) N.A. (iii) 25.6.1955/29.7.1955. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) Kada—68-1. (vii) Unirrigated. (viii) As per treatments. (ix) 86″. (x) 13.10.1955.

2. TREATMENTS :

	Method	Seed bed	Manuring to field	Spacing	Seedrate	Cultural operations
1.	Local	—	—	—	5 lb./guntha in seed bed	—
2.	Departmental	Flat seed bed 1 C.L. of F.Y.M. +8 lb. of A/s per guntha.	5 C.L. of F.Y.M. +G.M.×64 lb. N as A/S+32 lb. P_2O_5 as Super.	10″×10″	15 lb./guntha	one hand weeding
3.	Japanese I	Raised seed bed 1 C.L./ac. of F.Y.M.+16 lb. Super + 16 lb. A/S per guntha	5 C.L. of F.Y.M. G.M.+100 lb. of N as A/s+80 lb. P_2O_5 as Super	9″+9″	15 lb./guntha	One hand weeding and three interculturings
4.	Japanese II	Raised seed bed 1 C.L./ac. of F.Y.M.+16 lb. Super + 16 lb. A/S per guntha	5 C.L. of F.Y.M. G.M.+100 lb. of N as A/s+80 lb. P_2O_5 as Super	9″+0″	15 lb./guntha	one hand weeding

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) For 9″×9″ spacing : 10½′×33′ ; For 10″×10″ spacing 10′—10″×33′—4″. (b) 7½′×30′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—1956 (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1576 lb./ac. (ii) 236.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	1270	1527	1751	1756

S.E./mean =96.5 lb./ac.

Crop :- Paddy *(Kharif)*. **Ref :- Gj. 56(79).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To compare the Japanese, local and departmental methods of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nagli. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 26.6.1956/21.7.1956. (iv) (a) N A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) Kada—68-1. (vii) Unirrigated. (viii) As per treatments. (ix) 108.69″. (x) 15.10.1956.

2. TREATMENTS :

Same as in expt. no. 55(65) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) For 9″×9″ spacing : 10′×33′ ; for 10″×10″ spacing : 10′—10″×33′—4″. (b) 7½′×30′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1908 lb./ac. (ii) 554.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	1557	1940	2029	2105

S.E./mean =224.6 lb./ac.

Crop :- Wheat. **Ref :- Gj. 54 (10).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the suitability of calcium cynamide as a source of N in place of A/S and its effects on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Groundnut-Wheat-Cotton. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 27.11.54. (iv) (a) 2 harrowings. (b) By drill. (c) 60 lb./ac. (d) 9″ apart. (e) N.A (v) 5 C.L./ac. of F.Y.M. in October. (vi) Kenphad (R.R.) medium. (vii) Irrigated. (viii) 1 weeding. (ix) Nil. (x) 26.3.1955.

2. TREATMENTS :

4 sources of 40 lb./ac. of N : S_1=A/S alone, S_2=A/S and G.N.C. in 1 : 1 ratio, S_3=Ca CN alone and S_4= Ca CN and G.N.C. in 1 : 1 ratio.

All fertilizers applied at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 35′×13½′. (b) 30′×9¾′. (v) One row the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1216 lb./ac. (ii) 119.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4
Av. yield	1191	1218	1227	1227

S.E./mean =48.94 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 55(6).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the suitability of calcium cynamide as a source of N in place of A/S and its effects on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Groundnut-Wheat-Cotton. (b) Groundnut. (c) 5 C.L. /ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amerli. (iii) 7.11.1955. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) Between ows-9″, between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. in May. (vi) Kenphad (R.R.) medium. (vii) Irrigated. (viii) 1 weeding. (ix) 15.32″. (x) 23.3.1956.

2. TREATMENTS :

Same as in expt. no. 54(10) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 45′×13½′. (b) 40′×9¾′. (v) 2½′×1⅞′. (vi) Yes.

4. GENERAL :

(i) The germination and the initial growth was quite good. (ii) The disease of foot-rot was observed at few places showing white patches of dry immature plants. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1907 lb./ac. (ii) 153.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4
Av. yield	1924	1922	1918	1864

S.E./mean =62.50 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(91).**

Site :- Agri. College Farm, Anand. **Type :- 'M'.**

Object :—To study the effect of different nitrogenous fertilizers on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Anand. (iii) 13.11.1956. (iv) (a) N.A. (b) Drilling. (c) 100 lb./ac. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5. (vi) Kenphad. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

5 sources of 40 lb./ac. of N : S_0=Control, S_1=A/S, S_2=Urea, S_3=C/N, S_4=CaCN and S_5=A/S/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 21'×36'. (b) 15'×30'. (v) 3' around the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1415 lb./ac. (ii) 217.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	1180	1484	1499	1611	1173	1544

S.E./mean =108.9 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(87).**

Site :- Agri. College Farm, Anand. **Type :- 'M'.**

Object :—To study the effect of different nitrogenous fertilizers on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Black Cotton. (b) Refer soil analysis, Anand. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) 100 lb./ac. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5. (vi) Kenphad. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(91) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 21'×27'. (b) 15'×21'. (v) 3' around the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1109 lb./ac. (ii) 82.90 lb./ac (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	1063	1139	1155	1139	1044	1115

S.E./mean =41.45 lb./ac.

Crop :- Wheat. **Ref :- Gj. 54(7).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Medium deep black (b) Refer soil analysis, Arnej. (iii) 25.10.1954. (iv) (a) Four harrowings prior to sowing. (b) Drilled. (c) 40 lb./ac. (d) 12″. (e) N.A. (v) As per treatments. (vi) A.-206. (medium). (vii) Unirrigated. (viii) Weeding. (ix) 24.10″. (x) 10.3.1955.

2. TREATMENTS :

A=Control.
B=5 C.L./ac. of F.Y.M. every year starting from 1952.
C=5 C.L./ac. of F.Y.M. every alternate year starting from 1952.
D=5 C.L./ac. of F.Y.M. every alternate year starting from 1953.
E=5 C.L./ac. of F.Y.M. every third year starting from 1952.
F=5 C.L./ac. of F.Y.M. every third year starting from 1953.
G=5 C.L./ac. of F.Y.M. every third year starting from 1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 36′×16′. (b) 30′×10′. (v) N.A. (vi) No.

4. GENERAL :

(i) Good. (ii) and (iii) Nil. (iv) (a) 1952—58. (b) Yes. (c) Nil. (v) (a) No. (b) Nil. (vi) Cloudy weather at milk stage and excess of moisture affected the grain colour heavily. (vii) Nil.

5. RESULTS :

(i) 880.6 lb./ac. (ii) 132.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	A	B	C	D	E	F	G.
Av. yield.	813.1	918.9	871.2	869.5	856.7	971.6	863.2

S.E./Mean =54.25 lb./ac.

Crop :- Wheat (*Rabi*). **Ref :- Gj. 55(5).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat after wheat. (b) Wheat. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 27.10.1955. (iv) (a) N.A. (b) Driling. (c) 40 lb./ac. (d) 12″ between rows. (e) N.A. (v) Nil. (vi) Arnej-206. (vii) Unirrigated. (viii) Nil. (ix) 26.0″. (x) 25,26.2.1956.

2. TREATMENTS:

Same as in expt. no. 54(7) on page 41.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 36′×16′. (b) 30′×10′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—58. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 794 lb./ac. (ii) 103.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	A	B	C	D	E	F	G
Av. yield	891	756	802	716	721	859	814

S.E./Mean =42.37 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(4).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Wheat. (b) Wheat. (c) According to treatments. (ii) (a) Medium Black. (b) Refer soil analysis, Arnej (iii) 12.11.1956. (iv) (a) Four harrowings. (b) to (e) N.A. (v) Nil. (vi) A—206 (medium). (vii) Unirrigated. (viii) One weeding. (ix) 39″. (x) 26.2.1957.

2. TREATMENTS :

Same as in expt. no. 54(7) on page 41.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 36′×16′. (b) 30′×10′. (v) 3′×3′. (vi) No.

4. GENERAL :

(i) Normal. (ii) and (iii) Nil. (iv) (a) 1952—1957. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 558.2 lb./ac. (ii) 126.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	A	B	C	D	E	F	G
Av. yield	592.4	579.6	554.9	492.2	530.9	614.9	542.8

S.E./Mean =51.80 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(2).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Arnej.(iii) 14.10.1957. (iv) (a) Six harrowings. (b) to (e) N.A. (v) Nil. (vi) A—206 (medium). (vii) Unirrigated. (viii) One weeding. (ix) 13″. (x) 18.2.1958.

2. TREATMENTS :

Same as in expt. no. 54(7) on page 41.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 36′×16′. (b) 30′×10′. (v) 3′ all round the net/plot. (vi) No.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Crop failed due to scanty rains. (vii) Nil.

5. RESULTS :

(ii) 456.1 lb./ac. (ii) 126.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	A	B	C	D	E	F	G
Av. yield	458.8	486.2	472.4	440.7	428.6	443.8	462.0

S.E./mean =51.68 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(2).**

Site :- Agri. Res. Stn., Arnej. **Type :- ‘M’.**

Object :—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Wheat. (b) Wheat. (c) As per treatment. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 6.11.1958. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 12″ between rows. (e) N.A. (v) Nil. (vi) A—206. (vii) Unirrigated. (viii) Nil. (ix) 32.4″. (x) 9.3.1959.

2. TREATMENTS :

Same as in expt. no. 54(7) on page 41.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 24192 Sq. ft. (iii) 6. (iv) (a) 36′×16′. (b) 30′×10′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 813 lb./ac. (ii) 76.23 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	A	B	C	D	E	F	G
Av. yield	816	850	817	784	751	853	824

S.E./mean =31.12 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(46).**

Site :- Agri. Res. Stn., Arnej. **Type :- ‘M’.**

Object :—To see the effect of N and P on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Gram. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 8.11.1959. (iv) (a) Four harrowings. (b) Drilling. (c) 40 lb./ac. (d) 12″. (e) —. (v) Nil. (vi) Arnej—206. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 18.3.1960.

2. TREATMENTS :

All combinations of (1) and (2)+1 extra treatment T_1

(1) 4 levels of N as A/S : $N_0=0$, $N_1=10$ lb./ac., $N_2=20$ lb./ac. and $N_3=30$ lb./ac. of N.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=20$ lb./ac. of P_2O_5.

$T_1=10$ lb./ac. of of N as A/S+10 lb./ac. of N as G.N.C.+20 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 36′×21′. (b) 30′×15′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 590 lb./ac. (ii) 85.94 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

T_1 =631 lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	380	528	631	740	570
P_1	383	629	663	725	600
Mean	382	579	647	732	585

S.E. of N marginal means	=30.74 lb./ac.
S.E. of P marginal means	=21.73 lb./ac.
S.E. of body of table	=43.47 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(5).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To study the effect of micro-nutrients on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Gram. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 9.11.1956. (iv) (a) Five harrowings. (b) Drilling. (c) to (e) N.A. (v) (i) 20 lb./ac. of P_2O_5. (ii) 20 lb./ac. of N as A/S. (vi) A-206 (medium). (vii) Unirrigated. (viii) One weeding. (ix) 39″. (x) 12, 13.3.1957.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

1. 2 levels of Zinc (Zn) as $ZnSO_4$: $A_0=0$ and $A_1=ZnSO_4$ at 9 lb.+Lime at 2 lb.+100 gallons of water.

(2) 2 levels of Manganese (Mn) as Mn SO_4 : $B_0=0$ and $B_1=MnSO_4$ at 3 lb.+Lime at 2 lb.+100 gallons of water.

(3) 2 levels of Copper (Cu) as $CuSO_4$: $C_0=0$ and $C_1=CuSO_4$ at 8 lb.+Lime at 8 lb.+100 gallons of water.

(4) 2 levels of Molybdenum (M_o) as Sodium Molybdate+$CaCO_3$: $D_0=0$ and $D_1=$Sodium Molybdate at 3 oz.+100 gallons of water.

(5) 2 levels of Boron (B) as Borax : $E_0=0$, and $E_1=$Borax at 2 lb.+Bentonite at 0.5 lb.+100 gallons of water.

Total quantity of foliar spray is 140 gallons/ac. All sprays contain 3½ pints of Tenac (Burmah Shell) per 100 gallons as spreader and sticker.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) 17′×15′. (b) 12′×10′. (v) 2.5′ around the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 824.2 lb./ac. (ii) 155.1 lb./ac. (iii) Main effects and interactions are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	36.19	—	—	40.38	31.99	2.95	69.42	39.93	32.44	66.47	5.90
Mn	18.49	22.69	14.29	—	—	38.79	−1.81	47.19	−10.21	23.37	13.61
Cu	−84.06	−117.30	−50.82	−63.76	−104.36	—	—	−134.99	−33.13	−100.28	−67.84
Mo	−20.98	−17.24	−24.72	7.72	−49.68	−71.91	29.95	—	—	−49.45	7.49
B	−37.77	− 7.48	−68.06	−32.89	−42.65	−53.99	−21.55	−66.24	− 9.30	—	—

S.E. of mean response=27.42 lb./ac. S.E. of differential response =38.77 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 57(3).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To study the effect of micro-nutrients on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Gram. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 18.10.1957. (iv) (a) Eight harrowings. (b) to (e) N.A. (v) (i) 20 lb./ac. of P_2O_5 on 10.10.1957 by drilling. (ii) 20 lb./ac. of N as A/S drilled on 14.10.1957. (vi) A-20 (medium). (vii) Unirrigated. (viii) One weeding. (ix) 18″. (x) 22.2.1958.

2. TREATMENTS :

Same as in Expt. no. 56(5) on page 44.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 17′×15′. (b) 12′×10′. (v) 2.5′ around the net plot. (vi) Yes.

4. GENERAL :

(i) Poor due to scanty rain fall. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 364.3 lb./ac. (ii) 118.6 lb./ac. (iii) Main effects and interactions are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	32.84	—	—	13.61	52.07	27.56	38.11	42.65	23.03	21.44	44.24
Mn	−20.13	−39.36	− 0.91	—	—	−43.22	2.95	−16.56	−23.71	−33.46	− 6.81
Cu	6.52	1.25	11.80	−16.56	29.61	—	—	16.79	− 3.74	12.82	0.23
Mo	−15.60	− 5.78	−25.41	−12.02	−19.17	− 5.33	−25.86	—	—	−8.51	−22.69
B	20.59	9.19	31.99	7.26	33.92	26.88	14.29	27.68	13.50	—	—

S.E. of mean response =20.97 lb./ac. S.E. of differential response =29.65 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(117).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'M'.**

Object :—To study the effect of N on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Sann G.M. (ii) (a) Black. (b) Refer soil analysis, Dabhoi. (iii) 22.12.1959. (iv) (a) 2 ploughings and one harrowing. (b) Drilling. (c) 60 lb./ac. (d) 12″ between rows. (e) —. (v) Nil. (vi) NP-710. (vii) Irrigated. (viii) Nil. (ix) Nil. (x) 21.4.1960.

2. TREATMENTS :

4 levels of N as A/S : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
A/S applied on 22.12.1959 and 15.2.1960.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 34′×16′. (b) 30′×14′. (v) 2′×1′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 770 lb./ac. (ii) 127 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	N_0	N_1	N_2	N_3
Av. yield	504	824	915	836

S.E./mean =63.8 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(21).**

Site :- Agri. Res. Stn., Dohad. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on Wheat.

1. BASAL CONDITIONS :

(i) (a) Groundnut and Maize in *Kharif*—Wheat in *Rabi*. (b) Gram. (c) N.A. (ii) Light brown (*goradu*) (b) Refer soil analysis, Dohad. (iii) 3.12.1957 and 4.12.1957. (iv) (a) 2 ploughings. (b) Drilling. (c) 40 lb./ac. (d) 15″. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) R.R. (medium). (vii) Irrigated. (viii) N.A. (ix) 23.26″. (x) 2 and 3.4.1958.

2. TREATMENTS :

Same as in Expt. no. 56(5) on page 44.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 17′×15′. (b) 12′×10′. (v) 2.5′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—59. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 619 lb./ac. (ii) 122.2 lb./ac. (iii) Interaction Mo×B alone is significant. (iv) Mean and differential responses in lb./ac.

Differential response

Mean response	Zn		Mn		Cu		Mo		B	
	−	+	−	+	−	+	−	+	−	+
Zn −1.84	—	—	9.36	−13.04	6.24	−9.92	8.23	−11.91	13.05	−16.73
Mn 10.63	21.83	−0.57	—	—	18.71	2.55	35.44	−14.18	37.43	−16.17
Cu −17.44	−9.36	−25.52	−21.27	−13.61	—	—	−7.09	−27.79	−52.75	17.87
Mo 4.40	14.40	−5.67	29.21	−20.41	14.75	−5.95	—	—	−39.13	47.93
B −11.77	3.12	−26.66	15.03	−38.57	−47.08	23.54	−55.30	31.76	—	—

S.E. of mean response =21.60 lb./ac. S.E. of differential response =30.54 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(14).**

Site :- Agri. Res. Stn., Dohad. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on Wheat.

1. BASAL CONDITIONS :

(i) (a) Groundnut and Maize in *Kharif*—Wheat in *Rabi*. (b) Groundnut. (c) Nil. (ii) (a) Light brown (*goradu*). (b) Refer soil analysis, Dohad. (iii) 10.12.1958. (iv) (a) 2 ploughings. (b) Drilling. (c) 40 lb./ac. (d) 15″×3″ to 6″. (e) N.A. (v) 20 lb./ac. of P_2O_5 as Super in furrows+40 lb./ac. of N as A/S broadcast (vi) Kenphad-25 R.R. (medium.) (vii) Irrigated. (viii) 2 weedings. (ix) 46.62″. (x) 25 to 29.4.1959.

2. TREATMENTS :

Same as in Expt. no. 56(5) on page 44.

3. DESIGN:

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 17′×15′. (b) 12′×10′. (v) 2.5′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1957-59. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1376 lb./ac. (ii) 232.3 lb./ac. (iii) None of the effects is significant. (iv) Mean and differential responses in lb./ac.

Differential response

Mean response	Zn		Mn		Cu		Mo		B	
	−	+	−	+	−	+	−	+	−	+
Zn −77.02	—	—	−98.91	−55.13	−45.83	−108.21	−90.75	−63.29	−82.58	−71.46
Mn 26.43	4.54	48.32	—	—	28.13	24.73	60.35	− 7.49	97.55	−44.69
Cu −6.24	24.95	−37.43	− 4.54	− 7.94	—	—	44.47	−56.95	−29.95	17.47
Mo −53.43	−67.16	−39.70	−19.51	−87.35	− 2.72	−104.14	—	—	−26.77	−80.09
B 20.99	15.43	26.55	92.11	−50.13	− 2.72	44.70	47.65	− 5.67	—	—

S.E. of mean response =41.1 lb./ac. S.E. of differential response =58.1 lb./ac.

Crop :- Wheat. *(Rabi).* **Ref :- Gj. 59(6)**

Site :- Agri. Res. Stn., Dohad. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on Wheat.

1. BASAL CONDITIONS :

(i) (a) Groundnut and Maize in *kharif*—Wheat in *Rabi*. (b) Maize. (c) Super and A/S applied-amount N.A. (ii) (a) Light brown (*goradu*). (b) Refer soil analysis, Dohad. (iii) 17.11.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 40 lb./ac. (d) 15″×3″ to 6″. (e) N.A. (v) 5 C.L./ac. of F.Y.M.. (vi) Kenphad-25 (medium.) (vii) Irrigated. (viii) 2 weedings and 1 interculture. (ix) 36.62″. (x) 20 to 25.4.1960.

2. TREATMENTS :

Same as in Expt. No. 56(5) on page 44.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 17′×15′. (b) 12′×10′. (v) 2.5′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield and height of plant. (iv) (a) 1957-1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. and (vii) Nil.

5. RESULTS :

(i) 1478 lb./ac. (ii) 282.8 lb./ac. (iii) Interaction Zn×Mn alone is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	−117.69	—	—	−102.77	−132.61	−118.54	−116.84	−179.57	−55.81	−53.66	−181.72
Mn	129.60	144.52	114.68	—	—	128.52	130.68	96.99	162.21	142.36	116.84
Cu	46.23	45.38	47.08	45.15	47.31	—	—	29.16	63.30	−22.34	114.80
Mo	27.17	−34.71	89.05	−5.44	59.78	10.10	44.24	—	—	−67.61	121.95
B	−47.25	16.78	−111.28	−34.49	−60.01	−115.82	21.32	−142.03	47.53	—	—

S.E. of mean response =50.0 lb./ac. S.E. of differential response =70.7 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(15).**

Site :- Agri. Res. Stn., Dohad. **Type :- 'M'.**

Object :—To study the effect of application of Urea on growth and yield of Wheat.

1. BASAL CONDITIONS:

(i) (a) Maize—Wheat. (b) Maize. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Light brown (*goradu*). (b) Refer soil analysis, Dohad. (iii) 11.12.1958. (iv) (a) Two ploughings. (b) Drilling. (c) 40 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) Kenphad-25 (medium). (vii) Irrigated. (viii) 2 weedings and 2 intercultures. (ix) 46.62″. (x) 24.4.1959.

2. TREATMENTS

1. Control.
2. 1% Urea at flag leaf stag.
3. 1% Urea at flag leaf stage+1% Urea at flowering.
4. 3% Urea at flag leaf stage.
5. 3% Urea at flag leaf stage+3%Urea at flowering.
6. 5% Urea at flag leaf stage.
7. 5% Urea at flag leaf stage+5% Urea at flowering.

5. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 40′×12′. (b) 35′×8′. (v) 2.5′×2′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1958-59. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 999 lb./ac. (ii) 101.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7
Av. yield	804	884	948	1007	1065	1045	1237

S.E./mean =50.6 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 59(7).**
Site :- Agri. Res. Stn., Dohad. **Type :- 'M'.**

Object :—To study the effect of application of Urea on growth and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 20 lb./ac. of N as A/S. (ii) (a) Light brown (*goradu*). (b) Refer soil analysis, Dohad. (iii) 14.12.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 40 lb./ac. (d) 15″. (e) N.A. (v) Nil. (vi) Kenphad-25 (medium). (vii) Irrigated. (viii) 3 weedings. (ix) 36.62″. (x) 15 to 17.4.1960.

2. TREATMENTS :

Same as in expt. no. 58(15) on page 48.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42′×12′. (b) 38′×8′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1131 lb./ac. (ii) 235.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7
Av. yield	1025	1043	1074	1101	1160	1141	1370

S.E./mean =117.6 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 54(35).**
Site :- Agri. Res. Stn., Dohad. **Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Maize. (c) Nil. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) 29.11.1954. (iv) (a) 1 harrowing and 1 ploughing. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Pusa-4. (vii) Irrigated. (viii) N.A. (ix) 46.23″. (x) 3 to 5.4.1955.

2. TREATMENTS :

4 sources of 40 lb./ac. of N : S_0=Control (no manure), S_1=A/S, S_2=A/S and G.N.C. in 1 : 1 ratio, S_3= Ca CN and S_4=Ca CN and G.N.C. in 1 : 1 ratio.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (ii) 2. (iv) (a) 30′×63′. (b) 20′×53′. (v) 5′×5′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1608 lb./ac. (ii) 93.49 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	1359	1690	1781	1519	1693

S.E/mean =66.12 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 54(43).**

Site :- Agri. Res. Farm, Halvad. **Type :- 'M'.**

Object :—To study the effect N and P on growth and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Bajra.* (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 17.11.1959. (iv) (a) Harrowing, cultivation by drill three times after soaking. (b) Drilling. (c) 80 lb./ac. (d) 9″ between two lines. (e) N.A. (v) Nil. (vi) Wheat N.P. 710 (medium). (vii) Irrigated. (viii) Two intercultivations by *kudali* and one weeding. (ix) Nil. (x) 14.3.1955.

2. TREATMENTS :

All combinations of (1) and (2)
- (1) 3 levels of N as A/S : N_0=0, N_1=20 and N_2=40 lb./ac.
- (2) 3 levels of P_2O_5 as Super : P_0=0, P_1=20 and P_2=40 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 41′×13′. (b) 38′×10′. (v) Two lines on each side of plot lengthwise, 3′ distance breadthwise. (vi) Yes.

4. GENERAL :

(i) Not good, except in the plot N_2P_2. (ii) Nil. (iii) Height of plant, length of earheads, no. of earheads/plant, and no. of grains/earhead. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 458.8. (ii) 66.49 lb./ac. (iii) Main effect of N and P and interaction N×P are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean
P_0	173.7	279.1	289.3	247.4
P_1	303.0	514.3	676.1	497.8
P_2	389.9	601.2	902.7	631.3
Mean	288.9	464.9	622.7	458.8

S.E. of N or P marginal mean =15.67 lb./ac.

S.E. of body of table =27.14 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 55(29).**

Site :- Agri. Res. Farm, Halvad. **Type :- 'M'.**

Object :—To find out the optimum dose of N and P for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 300 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 23.11.1955. (iv) (a) 1 ploughing. (b) Drilling. (c) 60 lb./ac. (d) 9". (e) —. (v) Nil. (vi) Kenphad. (vii) Irrigated. (viii) Nil. (ix) 13.75". (x) 27.3.1956.

2. TREATMENTS :

Same as in Expt. no. 54(43) on page 50.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) 51'×13'. (b) 45'×6.75'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1076 lb./ac. (ii)) 124.9 lb./ac. (iii) Main effects of N and P and interaction N×P are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean
P_0	288	752	883	641
P_1	262	1571	1859	1231
P_2	474	1474	2123	1357
Mean	341	1266	1622	1076

S.E. of N or P marginal means =32.25 lb./ac.
S.E. of body of table =55.86 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(29).**

Site :- Agri. Res. Farm, Halvad. **Type :- 'M'.**

Object :—To find out the optimum dose of N and P for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Lucerne. (c) 50 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 23 and 24.11.1956. (iv) (a) 1 harrowing. (b) Drilling. (c) 60 lb./ac. (d) 9". (e) —. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) Nil. (ix) 33.75". (x) 18.3.1957.

2. TREATMENTS :

Same as in Expt. no. 54(43) on page 50.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) 51'×13'. (b) 45'×6.75'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No.(c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1197 lb./ac. (ii) 138.2 lb./ac. (iii) Main effects of N and P and their interaction are significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean
P_0	806	999	1140	982
P_1	736	1523	1564	1274
P_2	960	1377	1672	1336
Mean	834	1300	1459	1197

S.E. of N or P marginal means =35.68 lb./ac.
S.E. of body of table =61.81 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(123).**
Site :- Agri. Res. Farm, Halvad. **Type :- 'M'.**

Object :—To find out suitable doses of N, P and K for Wheat.

1. BASAL CONDITIONS :

(i) (a) Groundnut—wheat—cotton. (b) *Tur* in *Kharif*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 19.11.1956. (iv) (a) One ploughing. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 17.3.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 3 levels of N : N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 3 levels of P_2O_5 : P_1=20, P_2=40 and P_3=60 lb./ac.
(3) 3 levels of K_2O : K_1=10, K_2=20 and K_3=40 lb./ac.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) One. (iv) (a) 51′×4.5′. (b) 45′×2.25′. (v) 3′×1′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:

(i) 1829 lb./ac. (ii) 104.1 lb./ac. (iii) Main effect of N is highly significant while that of P is significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	N_1	N_2	N_3	Mean	K_1	K_2	K_3
P_1	1534	1729	1878	1714	1807	1620	1715
P_2	1672	1815	2180	1889	1815	1893	1959
P_3	1649	1864	2136	1883	1878	1950	1821
Mean	1618	1803	2065	1829	1833	1821	1832
K_1	1592	1916	1993				
K_2	1620	1663	2179				
K_3	1643	1830	2022				

S.E. of N, P or K marginal means = 34.7 lb./ac.
S.E. of body of any table = 60.1 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 57(33).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out suitable doses of N, P and K for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) 100 lb./ac. of manure mixture+50 lb./ac. of A/S. (ii) (a) Medium black (b) Refer soil analysis, Halvad. (iii) 8.11.1957. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) Kenphad. (vii) Irrigated. (viii) 3 weedings. (ix) Nil. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(123) on page 52.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 360 sq. ft. (b) 153 sq. ft. (v) Two rows on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) No. of plants, earheads and grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1215 lb./ac. (ii) 142.9 lb./ac. (iii) Main effects of N and P and interaction N×P are highly significant. Other effects and interactions are not significant. (iv) Av. yield of grain in lb./ac.

	N_1	N_2	N_3	Mean	K_1	K_2	K_3
P_1	871	1047	1272	1063	1077	1046	1066
P_2	899	1270	1517	1229	1274	1183	1229
P_3	989	1344	1722	1352	1424	1359	1272
Mean	920	1220	1504	1215	1259	1197	1189
K_1	974	1263	1539				
K_2	903	1239	1448				
K_3	883	1159	1525				

S.E. of marginal means of N, P or K =27.51 lb./ac.
S.E. of body of table =47.64 lb./ac.

Crop :- Wheat. **Ref :- Gj. 54(45).**

Site :- Agri. Res. Stn., Halvad. **Type :-'M'.**

Object :—To find out the proper time of application of A/S to Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black (b) Refer soil analysis, Halvad. (iii) 21.11.1954. (iv) (a) 2 harrowings. (b) Drilling. (c) 80 lb./ac. (d) 9″. (e)—. (v) Nil. (vi) N.P.-710. (vii) Irrigated (viii) 2 intercultures. (ix) Nil. (x) 16.3.1955.

2. TREATMENTS :

300 lb./ac. of A/S applied.
T_1=as a soaking dose ; T_2=at the time of sowing and T_3=at the time of first irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) 41′×13′. (b) 38′×10′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL

(i) Very poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1954-N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Yields very low. Reasons are not known.

5. RESULTS :

(i) 174 lb./ac. (ii) 40.65 lb./ac. (iii) Treatments differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	T_1	T_2	T_3
Av. yield	208	170	145

S.E./mean =14.37 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55(31).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out the proper time of application of A/S to Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black (b) Refer soil analysis, Halvad. (iii) 17.11.1955. (iv) (a) 3 ploughings. (b) Drillings. (c) 60 lb./ac. (d) 9″. (e)—. (v) 5 C.L. of F.Y.M./ac. on 16.10.1955. (vi) N.P.-710. (vii) Irrigated. (viii) Nil. (ix) 13.75″. (x) 20.3.1956.

2. TREATMENTS :

100 lb./ac. of A/S applied.

T_1=as a soaking dose (13.11.1955) ; T_2=at the time of sowing (16.11.1955.) and T_3=at the time of first irrigation (2.12.1955).

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 31′×13.5′. (b) 224 sq. ft. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1568 lb./ac. (ii) 126.2 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	T_1	T_2	T_3
Av. yield	1607	1460	1638

S.E./mean =51.52 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(31).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out the proper time of application of A/S to Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) 200 lb./ac. of Super. (ii) (a) Medium black. (ii) Refer soil analysis, Halvad. (iii) 20.11.1956. (iv) (a) 3 ploughings and 3 harrowings. (b) Drilling. (c) 80 lb./ac. (d) 9″. (e) —. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) Nil. (ix) 33.75″. (x) 19 and 20.3.1957.

2. TREATMENTS:

100 lb./ac. of A/S applied. T_1=as a soaking dose (10.11.1956). T_2=at the time of sowing (18.11.1956). and T_3=at first irrigation (13.12.1956).

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 40′×13′. (b) 34′×6.75′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1501 lb./ac. (ii) 174.9 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	T_1	T_2	T_3
Av. yield	1458	1540	1506

S.E./mean =71.42 lb./ac.

Crop :- Wheat.
Site :- Agri. Res. Stn., Halvad.

Ref :- Gj. 59(9).
Type :- 'M'.

Object :—To study the response of Wheat to different micro-nutrients.

1. BASAL CONDITIONS :

(i) (a) Legumes—cereal—cotton. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 30.11.1959. (iv) (a) 2 harrowings and 3 drill cultivations. (b) Drilling. (c) 60 lb./ac. (d) 9". (e) —. (v) 100 lb./ac. of A/N and 100 lb./ac. of P_2O_5. (vi) N.P.-710. (vii) Irrigated. (viii) 3 weedings. (ix) Nil. (x)27.3.1960.

2. TREATMENTS :

Same as in Expt. no. 56(5) on page 44.

3. DESIGN :

(i) R.B.D. Fact. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 30'×15'. (b) 24'×12'. (v) 3'×1.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Light attack of grass hoppers and stem-borer. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) Junagadh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1325 lb./ac. (ii) 237.3 lb./ac. (iii) None of the effects and their interactions is significant. (iv) Mean and differential response in lb./ac.

Differential response

Mean response	Zn		Mn		Cu		Mo		B	
	—	+	—	+	—	+	—	+	—	+
Zn 10.14	—	—	—25.57	45.85	—21.93	42.21	—12.90	33.18	47.31	—27.03
Mn 35.05	— 0.66	70.76	—	—	19.00	51.10	68.30	1.80	46.18	23.92
Cu — 8.67	—40.74	23.40	—24.72	7.38	—	—	28.79	—46.13	—24.34	7.00
Mo 9.90	—13.14	32.94	43.15	—23.35	47.36	—27.56	—	—	— 3.45	23.25
B —16.28	20.89	—53.45	— 5.15	—27.41	—31.95	— 0.61	—29.63	— 2.93	—	—

S.E. of mean response =41.96 lb./ac.
S.E. of differential response =59.33 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(127).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the residual effect of P_2O_5 applied to previous crop *Mug* on the yield of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Mug*. (b) *Mug*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 31.10.1957. (iv) (a) 4 ploughings, 3 harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) Nil. (ix) 15″. (x) 17.2.1958.

2. TREATMENTS :

1. 0 lb./ac. of P_2O_5.
2. 16 lb./ac. of P_2O_5 every year.
3. 16 lb./ac. of P_2O_5 alternate years.
4. 32 lb./ac. of P_2O_5 every year.
5. 32 lb./ac. of P_2O_5 alternate years.

Treatments applied to previous *Mug* crop.

3. DESIGN :

i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 51′×18′. (b) 45′×12.75′. (v) 3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1222 lb./ac. (ii) 109 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	1280	1172	1201	1242	1213

S.E./mean =54.77 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(21).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the residual effect of P_2O_5 on Wheat.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 13.11.1958. (iv) (a) 2 ploughings, 2 harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) 200 lb./ac. of A/S broadcast on 7.11.1958. (vi) N.P.-710. (vii) Irrigated. (viii) 2 intercultures. (ix) N.A. (x) 3.3.1959.

2. TREATMENTS :

Same as in Expt. no. 57(127) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1155 lb./ac. (ii) 118.0 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatments	1	2	3	4	5
Av. yield.	1183	1102	1118	1284	1089

S.E./mean =59.0 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(11).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the residual effect of P_2O_5 applied to previous *Mug* crop on the subsequent *rabi* crop Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) *Mug*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 22.11.1959. (iv) (a) 3 ploughings ; 2 harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) 3 weedings. (ix) Nil. (x) 23.3.1960.

2. TREATMENTS :

1. Control.
2. 16 lb./ac. of P_2O_5 every year.
3. 16 lb./ac. of P_2O_5 alternate year.
4. 32 lb./ac. of P_2O_5 every year.
5. 32 lb./ac. of P_2O_5 alternate year.

Manures applied to previous *mug* crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Slight lodging due to stormy winds and rains. (ii) Light attack of grass hoppers and stem borer. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 579.6 lb./ac. (ii) 130.7 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	507	552	566	665	608

S.E./mean =65.34 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(113).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'M'.**

Object :—To find out the N and P_2O_5 requirements of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 4.11.1956. (iv) (a) N.A. (b) Drilling. (c) 100 lb./ac. (d) 9″ between rows. (e) —. (v) Nil. (vi) N.P.-798. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 14.3.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=20$, $N_2=30$ and $N_3=40$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=18$ and $P_2=36$ lb./ac.

3. DESIGN :

(i) R.B.D. Fact. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1712 lb./ac. (ii) N.A. (iii) Main effects and interaction are significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1200	1500	1717	1600	1504
P_1	1600	1966	1866	1833	1816
P_2	1433	1733	1966	2133	1816
Mean	1411	1733	1850	1855	1712

Crop :- Wheat. **Ref :- Gj. 59(20).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Clayey loam to medium black. (b) Refer soil analysis, Jamnagar. (iii) 2.11.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) to (e) N.A. (v) Sann G.M. (vi) N.P.-718 (early). (vii) Irrigated. (viii) 1 weeding, 1 Interculturing. (ix) 30″. (x) 17.3.1960.

2. TREATMENTS :

Same as in Expt. no. 56(5) on page 44.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) 120′×68′. (iii) 4. (iv) (a) 15′×17′. (b) 10′×12′. (v) 2.5′ around the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1010 lb./ac. (ii) 373.9 lb./ac. (iii) Response to Zn alone is significant. (iv) Mean and differential responses in lb./ac.

Differential response

Mean response	Zn		Mn		Cu		Mo		B	
	−	+	−	+	−	+	−	+	−	+
Zn 135.6	—	—	127.0	144.2	175.8	95.4	95.5	175.7	151.9	119.3
Mn −73.6	−82.2	−65.0	—	—	− 99.4	−47.8	−77.2	70.0	−170.3	23.1
Cu −39.1	1.1	−79.3	−64.9	−13.3	—	—	29.7	−107.9	− 22.8	−55.4
Mo 85.2	45.1	125.3	81.6	88.8	154.0	16.4	—	—	116.0	54.4
B −48.7	−32.4	−65.0	−145.4	48.0	− 32.4	−65.0	−107.9	− 79.5	—	—

S.E. of mean response =66.11 lb./ac.
S.E. of differential response =93.48 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(46).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find the optimum dose of N and P_2O_5 for Wheat.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Sann—hemp G.M. (c) N.A. (ii) (a) Medium black, 2′ to 2½′ deep. (b) Refer soil analysis, Junagadh. (iii) 3.11.1956. (iv) (a) 1 ploughing and 1 to 2 harrowings. (b) Drilling. (c) 60 lb./ac. (d) Between rows—12″, between plants-irregular. (e) N.A. (v) Nil. (vi) S-56 medium. (vii) Irrigated. (viii) 2 weedings and 4 interculturings. (ix) Nil. (x) 9.2.1957.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=30$ lb./ac.

Sub-plot treatments :

4 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$, $P_2=30$ and $P_3=40$ lb./ac.

P_2O_5 was drilled before sowing, N applied (i) at the time of sowing, (ii) one month after sowing and (iii) at the time of flag leaf emergence.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block, 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 32′×16′. (b) 27′×11′. (v) 2½′ around the net plot. (vi) Yes.

4. GENERAL :

(i) The crop was healthy. No lodging. (ii) Slight rust attack, damage negligible. No control measures were taken. (iii) Days of earing, height, grain yield, and spikelet numbers. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1566 lb./ac. (ii) (a) 450.3 lb./ac. (b) 202.7 lb./ac. (iii) Main effect of P_2O_5 is highly significant. Main effect of N and interaction N×P are not significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean
P_0	1172	1317	1374	1288
P_1	1404	1728	1665	1599
P_2	1563	1843	1655	1687
P_3	1601	1629	1846	1692
Mean	1435	1629	1635	1566

S.E. of difference of two

1. N marginal means =159.2 lb./ac.
2. P marginal means = 82.6 lb./ac.
3. P means at a level of N =143.3 lb./ac.
4. N means at a level of P =201.8 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(55).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find the optimum dose of N and P_2O_5 for Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sann hemp G.M. (c) N.A. (ii) (a) 2′ to 2½′ deep medium black. (b) Refer soil analysis, Junagadh. (iii) 2.11.1957. (iv) (a) One ploughing and 2 to 3 harrowings. (b) Drilling. (c) 60 lb./ac. (d) Between rows 9″, between plants-irregular. (e) N.A. (v) Nil. (vi) S-56 (medium). (vii) Irrigated. (viii) 2 weedings and 1 interculturing. (ix) Nil. (x) 26.2.1958.

2. TREATMENTS :

Same as in Expt. no. 56(46) on page 59.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block, 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30′×12′. (b) 24′×7½′. (v) 3 rows on each side. (vi) Yes.

4. GENERAL :

(i) Growth was good, No lodging. (ii) Attack of rust on stems—no considerable damage, hence no control measures were taken. (iii) Height, earing dates, no. of spikelets and grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1850 lb./ac. (ii) (a) 198.1 lb./ac. (b) 134.7 lb./ac. (iii) Main effects of N and P are highly significant. Interaction N×P is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1388	1867	1639	1996	1723
P_1	1800	1961	1902	1982	1911
P_2	1528	1966	1932	1993	1855
P_3	1606	1961	1867	2212	1912
Mean	1581	1939	1835	2046	1850

S.E. of difference of two
1. N marginal means = 70.0 lb./ac.
2. P marginal means = 47.6 lb./ac.
3 P means at a level of N = 95.3 lb./ac.
4. N means at a level of P =108.2 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(122).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find the optimum dose of N and P_2O_5 for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) No. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 7/8.11.1958. (iv) (a) to (e) N.A. (v) Nil. (vi) S—56. (vii) Irrigated. (viii) One interculturing. (ix) Nil. (x) 26-27.2.1959.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N : $N_0=0$, $N_1=20$, $N_2=30$ and $N_3=40$ lb./ac.
(2) 4 levels of P_2O_5 : $P_0=0$, $P_1=20$, $P_2=30$ and $P_3=40$ lb./ac.

3. DESIGN :

(i) R.B.D. Fact. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 30′×12′. (b) 24′×9′. (v) 3′×1.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) 1956—58. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1367 lb./ac. (ii) 166.6 lb./ac. (iii) Main effects of N and P are highly significant. Interaction N×P is not significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1136	1264	1241	1275	1229
P_1	1154	1367	1522	1346	1347
P_2	1271	1354	1508	1489	1406
P_3	1398	1468	1504	1569	1485
Mean	1240	1363	1444	1420	1367

S.E. of marginal means of N or P =41.7 lb./ac.
S.E. of body of table =83.3 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(111).**

Site :- Agri. Res. Stn., Porbandar. **Type :- 'M'.**

Object :—To study the effect of different manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) N.A. (ii) Medium black. (b) Refer soil analysis, Umrala. (iii) 1.11.1956. (iv) (a) N.A. (b) Drilling. (c) 90 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) Kenphad. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 9.3.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 2 levels of N as A/S : N_0=0 and N_1=10 lb./ac.
(2) 2 levels of P_2O_5 as Super : P_0=0, and P_1=9 lb./ac.
(3) 2 levels of F.Y.M. : F_0=0. F_1=2000 lb./ac.
Time and method of application N.A.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) —. (iii) 4. (iv) (a) N.A. (b) 45'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 547 lb./ac. (ii) 116.3 lb./ac. (iii) None of the effects and interactions is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	Mean	F_0	F_1
P_0	474	600	537	540	535
P_1	540	575	557	592	522
Mean	507	588	547	566	528
F_0	540	593			
F_1	474	582			

S.E. of marginal means =29.1 lb./ac.
S.E. of body of table =41.1 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55(95).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—T find out the N and P_2O_5 requirements of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann for G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 11.11.1955. (iv) (a) One ploughing, one harrowing. (b) Drilling. (c) 90 lb./ac. (d) 9" between rows. (e) —. (v) Sann G.M. (vi) Kenphad-28. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 20 and 21.3.1956.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 2 levels of N as A/S : $N_0=0$ and $N_1=30$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=18$ and $P_2=36$ lb./ac.
N applied on 26.12.1955 and P_2O_5 applied at sowing.

3. DESIGN :

(i) 2×3 Fact. in L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 21'×26'. (b) 15'×20' (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1714 lb./ac. (ii) 112.8 lb./ac. (iii) Main effects of N and P are highly significant. Interaction N×P is not significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean
N_0	1189	1743	1797	1576
N_1	1534	1906	2117	1852
Mean	1361	1824	1957	1714

S.E. of N marginal means =26.6 lb./ac.
S.E. of P marginal means =32.6 lb./ac.
S.E. of body of table =46.1 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(102).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To find out the N and P_2O_5 requirements of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) 20 lb./ac. of N as manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 24.11.1956. (iv) (a) One harrowing. (b) Drilling. (c) 90 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Kenphad-28. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 18.3.1957.

2. TREATMENTS :

All combinations of (1) and (2).
(1) 2 level of N as A/S : $N_0=0$, $N_1=30$ lb./ac.
(2) 3 level of P_2O_5 as Super : $P_0=0$, $P_1=18$ and $P_2=36$ lb./ac.
N applied at sowing and P_2O_5 before sowing.

3. DESIGN :

(i) 2×3 Fact in L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 21'×26'. (b) 15'×20'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1955-contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1376 lb./ac. (ii) 170.6 lb./ac. (iii) Main effects of N and P are highly significant. N×P is not significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean
N_0	1168	1301	1385	1285
N_1	1216	1603	1585	1468
Mean	1192	1452	1485	1376

S.E. of N marginal means =40.2 lb./ac.
S.E. of P marginal means =49.2 lb./ac.
S.E. of body of table =69.6 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(77).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To find out the N and P_2O_5 requirements of Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sann hemp as G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 29.10.1957. (iv) (a) Two ploughings and two harrowings. (b) to (e) N.A. (v) Nil. (vi) Kenphad-28. (vii) Irrigated. (viii) Weeding on 27.12.1956. (ix) Nil. (x) 3.3.1958.

2. TREATMENTS :

Same as in Expt. no. 56(102) on page 62.

3. DESIGN:

(i) 2×3 Fact. in L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 21′×26′. (b) 15′×20′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust attack. (iii) Height of plants, no. of tillers and grain yield. (iv) (a) 1955-57. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1331 lb./ac. (ii) 218.8 lb./ac. (iii) Main effect of P is highly significant. Main effect of N and interaction N×P are not significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean
N_0	938	1361	1595	1298
N_1	1064	1424	1604	1364
Mean	1001	1393	1600	1331

S.E. of N marginal means =51.6 lb./ac.
S.E. of P marginal means =63.1 lb./ac.
S.E. of body of table =89.3 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(100).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To find out the economic dose of N for Whea .

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) 30 lb./ac. of N as manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 25.11.1956. (iv) (a) One harrowing. (b) Drilling. (c) 90 lb./ac. (d) 9″ between rows. (e) N.A. (v) Nil. (vi) Kenphad-28. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 18.3.1957.

2. TREATMENTS :

1. Control (no manure)
2. 0 lb./ac. of N+18 lb./ac. of P_2O_5.
3. 20 lb./ac. of N+18 lb./ac. of P_2O_5.
4. 40 lb./ac. of N+18 lb./ac. of P_2O_5.
5. 60 lb./ac. of N+18 lb./ac. of P_2O_5.
6. 80 lb./ac. of N+18 lb./ac. of P_2O_5.
7. 100 lb./ac. of N+18 lb./ac. of P_2O_5.

N as A/S and P_2O_5 as Super applied in furrows after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) 12′×30′. (b) 6′×24′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1349 lb./ac. (ii) 223.2 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7
Av. yield	1104	1338	1437	1301	1422	1361	1482

S.E./mean =99.8 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(79).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To find out the economic dose of N for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann hemp for G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 2.11.1957. (iv) (a) and (b) The sann was buried with iron plough, then one wooden ploughing followed by two harrowings. (c) to (e) N.A. (v) Nil. (vi) Kenphad-28. (vii) Irrigated. (viii) One weeding. (ix) Negligible. (x) 3.3.1958.

2. TREATMENTS :

6 levels of N : N_0=0, N_1=20, N_2=40, N_3=60, N_4=80 and N_5=100 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24′×18′. (b) 18′×12′. (v) 3′ around the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height in cm. no. of tillers, length and no. of spikelets, grain and fodder yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 924 lb./ac. (ii) 232.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	N_0	N_1	N_2	N_3	N_4	N_5
Av. yield	797	888	914	914	1109	923

S.E./mean =116.0 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(80).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To find out the suitable time of application of N to Wheat crop under irrigated conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Local *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 13.11.1957. (iv) (a) Two ploughings and two harrowings. (b) to (e) N.A. (v) Nil. (vi) Kenphad-28. (vii) Irrigated. (viii) N.A. (ix) Negligible. (x) 8.3.1958.

2. TREATMENTS :

40 lb./ac. of N as A/s applied at :—T_1=sowing time, T_2=tillering, T_3=flag leaf stage, $T_4=\frac{1}{2}$ at sowing $+\frac{1}{2}$ at tillering and $T_5=\frac{1}{3}$ at sowing$+\frac{1}{3}$ at tillering$+\frac{1}{3}$ at flag leaf stage.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 12′×15′. (b) 9′×12′. (v) 1½′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height and number of tillers. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 715 lb./ac. (ii) 176.5 lb./ac. (iii) Treatments differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatments	T_1	T_2	T_3	T_4	T_5
Av. yield	741	671	786	691	686

S.E./mean =78.9 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(101).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of micro-nutrients on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 25.11.1959. (iv) (a) One ploughing, one harrowing. (b) Drilling. (c) 60 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.-718. (vii) Irrigated. (viii) Nil. (ix) 25.98″ for the whole year. (x) N.A.

2. TREATMENTS :

Same as in Expt. no. 56(5) on page 44.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 18′×15′. (b) 15′×12′. (v) 1.5′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1959-contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 289 lb./ac. (ii) 129.59 lb./ac. (iii) Interaction Mn×B is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	15.50	—	—	−14.11	45.11	23.82	7.18	11.11	19.89	26.01	4.99
Mn	37.58	7.97	67.19	—	—	50.28	24.88	21.55	53.61	88.32	−13.16
Cu	2.95	11.27	−5.37	15.65	−9.75	—	—	−1.28	7.18	−7.56	13.46
Mo	40.16	35.77	44.55	24.13	56.19	35.93	44.39	—	—	58.54	21.78
B	−16.49	−5.98	−27.00	34.25	−67.23	−27.00	−5.98	1.89	−34.87	—	—

S.E. of differential response =32.40 lb./ac.
S.E. of mean response =22.91 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55(61).**
Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To determine the effect of different micro-nutrients on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra* and Wheat. (c) 8 C.L. of F.Y.M./ac. (ii) (a) Sandy loam. (b) N.A. (iii) 21.11.1955. (iv) (a) N.A. (b) Drilling. (c) 80 lb./ac. (d) 12″ apart. (e) N.A. (v) (i) 40 lb./ac. of N as A/S and (ii) 20 lb./ac. of P_2O_5. (vi) A-206. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 19.3.1956.

2. TREATMENTS :

Same as in expt. no. 56(5) on page 44 at Arnej.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 20′×12′. (b) 16′×8′. (v) 2′ all round the net plot. (vi) Yes.

4. GENERAL:

(i) Fairly good. (ii) The crop was attacked by rust and root rot. (iii) Grain and fodder yield. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) (a) Arnej, Jamnagar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3090 lb./ac. (ii) 1033.9 lb./ac. (iii) None of the effects is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	235.55	—	—	436.65	34.45	476.64	—5.54	−11.28	482.38	219.81	251.29
Mn	139.42	340.52	−61.68	—	—	−124.21	403.05	39.56	239.28	317.44	−38.60
Cu	131.12	372.21	−109.97	−132.51	394.75	—	—	28.07	234.17	—84.12	346.36
Mo	−94.75	−341.58	152.08	−194.61	5.11	−197.80	8.30	—	—	—63.49	−126.01
B	−164.20	−179.94	−148.46	13.82	−342.22	−379.44	51.04	−132.94	−195.46	—	—

S.E. of mean response =182.8 lb./ac.
S.E. of differential response =258.5 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(72).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cigarette tobacco. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 4.12.1956. (iv) (a) N.A. (b) Broadcasting. (c) 80 lb./ac. (d) 12″ between rows. (e) N.A. (v) Nil. (vi) Wheat (A-206). (vii) Irrigated. (viii) Nil. (ix) Nil. (x) 28.3.1957.

2. TREATMENTS :

Same as in expt. no. 56(5) on page 44 at Arnej.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 17′×15′. (b) 12′×10′. (v) 2.5′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) The season was characterised by a severe infection of wheat crop by leaf and stem rust. Although the variety grown is fairly resistant to wheat rust, the seed being not pure, the crop was partially attacked by rust, which ultimately affected the total yield and grain size. (ii) The crop was badly affected by wheat rust disease. (iii) Grain and fodder yield. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) (a) Arnej, Jamnagar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2079.9 lb./ac. (ii) 504.8 lb./ac. (iii) Interaction A×E alone is significant. (iv) Av. yield of grain in lb./ac.

	A_0	A_1	B_0	B_1	C_0	C_1	Mean	D_0	D_1
E_0	2246	2046	2046	2246	2210	2082	2146	2176	2116
E_1	1917	2105	1927	2096	2033	1989	2011	2074	1948
Mean	2081	2076	1986	2171	2121	2035	2079	2125	2032
D_0	2105	2145	1946	2304	2174	2076			
D_1	2058	2007	2027	2242	2069	1995			
C_0	2162	2081	2026	2217					
C_1	2000	2070	1947	2124					
B_0	2001	1971							
B_1	2162	2180							

S.E. of any marginal mean =63.1 lb./ac.

S.E. of body of any table =89.2 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 58(61).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the effect of different combinations of five micro-nutrients on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajri.* (c) N.A. (ii) (a) *Gorat.* (sandy loam.) (b) Nil. (iii) 20.11.1958. (iv) (a) 2 ploughings and harrowing. (b) Drilling. (c) 80 lb./ac. (d) 12″ between rows. (e) N.A. (v) 40 lb./ac. of N as A/S by broadcasting on 19.11.1958 and 20 lb./ac. of P_2O_5 as Super on 19.11.1958. (vi) Wheat A-206. (vii) Irrigated. (viii) 2 interculturings. (ix) 25.77″. (x) 16, 17.3.1959.

2. TREATMENTS :

Some as in expt. no. 56(5) on Page 44 at Arnej.

3. DESIGN :

(i) R.B.D. Fact. (ii) (a) 32. (b) N.A. (iii) 4. (iv) 22′×12′. (b) 15′×8′. (v) 2.5′×2′. (vi) Yes.

4. GENERAL :

(i) Growth was good till flowering but it has been damaged due to occurance of rust. (ii) Slight attack of white ant and 50% attack of rust. (iii) Grain and fodder yield, height of plant, no. of tillers, length, breadth and height of roots. (iv) (a) 1955-1959. (b) No. (c) Nil. (v) (a) Arnej, Dohad. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 512 lb./ac. (ii) 150.3 lb./ac. (iii) Effect of Cu and interaction Zn×Mo are significant. Others are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

Mean response		Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	13.44	—	—	46.85	−19.97	−16.68	43.56	−43.11	69.99	−6.13	33.01
Mn	51.33	84.74	17.92	—	—	24.84	77.82	53.77	48.89	65.34	37.32
Cu	59.50	29.38	89.62	33.01	85.99	—	—	39.93	79.07	61.26	57.74
Mo	23.76	—32.79	80.31	26.20	21.32	4.19	43.33	—	—	42.19	5.33
B	−16.84	−36.41	2.73	—2.83	—30.85	—15.08	—18.60	1.59	−35.27	—	—

S.E. of mean response =26.57 lb./ac.

S.E. of differential response =37.57 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(41).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Light sandy. (b) N.A. (iii) 16.11.1959. (iv) (a) Nil. (b) Drilling. (c) 80 lb./ac. (d) 12″. (e) —. (v) Nil. (vi) Arnej-206. (vii) Irrigated. (viii) 2 weedings and 1 interculturing. (ix) 53.81″. (x) 29.2.1960.

2. TREATMENTS :

Same as in expt. no. 56(5) on page 44 at Arnej.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) 82′×96′. (iii) 4. (iv) (a) 20′×20′. (b) 15′×18′. (v) 2.5′×1′. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) White ant attack. Aldrin (30 E.C.) spread on 5.2.1959. as precaution from white ants. (iii) Grain and fodder yield. (iv) (a) 1955-59. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 204.8 lb./ac. (ii) 23.60 lb./ac. (iii) Only interactions Mn×Cu and Mn×Mo are significant. Main effects and other interactions are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	6.98	—	—	37.35	−23.59	25.07	−11.11	13.62	0.34	1.82	12.14
Mn	−27.96	2.61	−58.53	—	—	−65.90	9.98	6.35	−62.27	−28.81	−27.11
Cu	6.07	24.16	−12.02	−31.87	44.01	—	—	−21.32	33.46	4.09	8.05
Mo	6.64	13.28	0.00	40.95	−27.67	−20.75	34.03	—	—	− 4.99	18.27
B	8.90	3.74	14.06	8.05	9.75	6.92	10.88	− 2.73	20.53	—	—

S.E. of mean response =4.17 lb./ac.
S.E. of differential response =5.90 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(62).**
Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To find out the optimum requirements of N for Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light sandy. (b) N.A. (iii) 1.12.1958. (iv) (a) Nil. (b) Drilling. (c) 80 lb./ac. (d) 12″. (e) —. (v) Nil. (vi) N-345. (vii) Irrigated. (viii) 1 weeding and 2 interculturings. (ix) 25.77″. (x) 1.4.1959.

2. TREATMENTS :

1. 60 lb./ac. of N as A/S in two doses.
2. 40 lb./ac. of N as A/S in two doses.
3. Control.

1st dose on 1.12.1958 and 2nd dose on 8.1.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 40′×42′. (iii) 6. (iv) (a) 40′×14′. (b) 36′×12′. (v) 2′×1′. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957-1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 521 lb./ac. (ii) 148.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	665	621	278

S.E./mean =60.6 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(42).**
Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To find out the optimum requirements of N for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Light sandy. (b) N.A. (iii) 18.11.1959. (iv) (a) Nil. (b) Drilling. (c) 80 lb./ac. (d) 12″. (e) —. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) 3 weedings and 1 interculturing. (ix) 53.81″. (x) 17.3.1960.

2. TREATMENTS :

1. 60 lb./ac. of N as A/S in two doses.
2. 40 lb./ac. of N as A/S in two doses.
3. 20 lb./ac. of N as A/S in two doses.
4. Control.

1st dose on 9.12.1959 and 2nd dose on 3.1.1960.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 38′×72′. (iii) 4. (iv) (a) 38′×18′. (b) 34′×16′. (v) 2′×1′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 845 lb./ac. (ii) 119.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	1236	900	711	532

S.E./mean =59.7 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 56 (MAE).**
Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type 4—To study the residual effect of P_2O_5 applied to legumes and direct effect of N on Wheat crop.

1. BASAL CONDITIONS:

(i) (a) Legumes—Wheat. (b) and (c) As per treatments. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) 15.11.1956. (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 90 lb./ac. (d) Rows 9″ apart. (e) N.A. (v) Nil. (vi) Kenphad—28. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 12.3.1957.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+a control (fallow L_0P_0).

(1) 3 levels of P_2O_5 as single Super applied to legumes : $P_0=0$, $P_1=40$ and $P_2=80$ lb./ac.
(2) 2 legumes : L_1=Groundnut and L_2=Sesamum.

Sub-plot treatments :

3 levels of N as A/S : $N_0=0$, $N_1=15$ and $N_2=30$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 14⅓′×12′. (b) 12′×9′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1401 lb./ac. (ii) (a) 312.2 lb./ac. (b) 277.1 lb./ac. (iii) Only P effect is significant. (iv) Av. yield of grain in lb./ac.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	L_2P_0	L_2P_1	L_2P_2	Mean
N_0	1277	1210	1512	1681	1327	1471	1748	1461
N_1	1479	1024	1311	1109	1445	1210	1815	1342
N_2	1730	1101	1277	1580	1236	1463	1404	1399
Mean	1495	1112	1367	1457	1336	1381	1656	1401

S.E. of difference of two

1. LP marginal means =147.2 lb./ac.
2. N marginal means = 85.5 lb./ac.
3. N means at the same level of LP =226.3 lb./ac.
4. LP means at the same level of N =236.2 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 57 (MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type 4—To study the residual effect of P_2O_5 applied to legumes and direct effect of N on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Legumes—Wheat. (b) and (c) As per treatments. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) 2nd week of Nov. 1957. (iv) (a) 2 ploughings, 2 harrowings. (b) Drilling. (c) 90 lb./ac. (d) Rows 9″ apart. (e) —. (v) Nil. (vi) Kenphad—28. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 2nd week of March, 1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56 (MAE) on page 70.

5. RESULTS :

(i) 1331 lb./ac. (ii) (a) 190.7 lb./ac. (b) 170.5 lb./ac. (iii) Only L and P effects are highly significant. (iv) Av. yield of grain in lb./ac.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	L_2P_0	L_2P_1	L_2P_2	Mean
N_0	1268	983	1362	1478	1084	1436	1731	1335
N_1	1209	831	1361	1453	1227	1429	1698	1315
N_2	1455	882	1328	1639	1067	1404	1621	1342
Mean	1311	899	1350	1523	1126	1423	1683	1331

S.E. of difference of two

1. LP marginal means = 89.9 lb./ac.
2. N marginal means = 52.6 lb./ac.
3. N means at the same level of LP =139.2 lb./ac.
4. LP means at the same level of N =144.9 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 58 (MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type 4—To study the residual effect of P_2O_5 applied to legumes and direct effect of N on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Legumes—Wheat. (b) and (c) As per treatments. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) Nov. 1958. (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 90 lb./ac. (d) Rows 9″ apart. (e) —. (v) Nil. (vi) Kenphad—28. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) March. 1959.

2. TREATMENTS : to 4. GENERAL :

Same as in expt. no. 56(MAE) on page. 70.

5. RESULTS :

(i) 1019 lb./ac. (ii) (a) 195.6 lb./ac. (b) 116.3 lb./ac. (iii) L, control *vs.* other LP effects and interaction N×control *vs.* others are significant. N effect is highly significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	L_2P_0	L_2P_1	L_2P_2	Mean
N_0	956	671	949	757	906	957	916	873
N_1	1194	874	1058	992	941	1074	1184	1045
N_2	1445	983	1007	899	1151	1344	1141	1139
Mean	1198	843	1005	883	999	1125	1080	1019

S.E. of difference of two
1. LP marginal means = 92.2 lb./ac.
2. N marginal means = 35.9 lb./ac.
3. N means at the same level of LP = 95.0 lb./ac.
4. LP means at the same level of N =120.5 lb./ac.

Crop :- Wheat *(Rabi).*
Ref :- Gj. 59 (MAE).
Site :- M.A.E. Farm, Umrala,
Type :- 'M'.

Object :—Type 4—To study the residual effects of P_2O_5 applied to legumes and direct effect of N on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Legumes—Wheat. (b) and (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 2.11.1959. (iv) (a) One ploughing and two harrowings. (b) Drilling. (c) 80 lb./ac. (d) 9″. (e) —. (v) Nil. (vi) N.P. 718 medium. (vii) Irrigated. (viii) 2 weedings. (ix) 25.98″. (x) 26.2.1960.

2. TREATMENTS : to 4. GENERAL :

Same as in expt. no. 56(MAE) on page 70.

5. RESULTS :

(i) 658 lb./ac. (ii) (a) 190.2 lb./ac. (b) 157.7 lb./ac. (iii) Only P effect is significant. (iv) Av. yield of grain in lb./ac.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	L_2P_0	L_2P_1	L_2P_2	Mean
N_0	773	471	588	907	588	538	537	629
N_1	655	570	671	639	621	823	722	672
N_2	738	571	639	823	436	807	688	672
Mean	722	537	633	790	548	723	649	658

S.E. of difference of two
1. LP marginal means = 89.7 lb./ac.
2. N marginal means = 48.7 lb./ac.
3. N means at the same level of LP =128.8 lb./ac.
4. LP means at the same level of N =138.2 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 57(MAE).**

Site :- M.A.E., Farm, Umrala. **Type :- 'M'.**

Object :—Type 2—To study the long term effect of three levels each of N, P, K and two levels of bulky manure on three-course rotation crops.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Wheat—Cotton—Fallow. (b) *Jowar.* (c) As per treatments. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) 2nd week of November. (iv) (a) 2 ploughings and 2 harrowings. (b) N.A. (c) 90 lb./ac. (d) N.A. (e) N.A. (v) N.A. (vi) Kenphad-28. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 2nd week of March.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=5000$ lb./ac. of F.Y.M.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.
(3) 3 levels of K_2O : $K_0=0$, $K_1=30$ and $K_2=60$ lb./ac.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 2 main-plots/replication ; 3 sub-blocks/main-plot and 9 sub-plots/sub-block. (b) N.A. (iii) 1. (iv) (a) 30'×15'. (b) 24'×12'. (v) 3'×1.5'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1957 (*kharif*)—contd. (b) Yes. (c) Nil. (v) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 905 lb./ac. (ii) (a) 369.0 lb./ac. (b) 104.5 lb./ac. (iii) P effect is highly significant. Interactions NP, PK, NPK and FP are significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	884	908	939	783	911	1037	870	945	916	910
F_1	884	890	923	897	839	961	895	894	909	899
Mean	884	899	931	840	875	999	882	920	912	905
K_0	860	843	944	848	822	977				
K_1	873	1005	881	914	840	1005				
K_2	920	848	969	759	963	1015				
P_0	734	844	942							
P_1	904	913	808							
P_2	1015	939	1043							

S.E. of difference of two

1. F marginal means =100.4 lb./ac.
2. N, P or K marginal means = 34.8 lb./ac.
3. N. P, or K means at the same level of F = 49.3 lb./ac.
4. F means at the same level of N. P, or K =108.2 lb./ac.
5. Means in the body of N×P, N×K or P×K table = 60.3 lb./ac.

Crop :- Wheat *(Rabi)***.**
Site :- M.A.E. Farm, Umrala.

Ref :- Gj. 58(MAE)
Type :-'M'.

Object :—Type 2—To study the long term effect of three levels each of N, P, K and two levels of bulky manure on three-course rotation crops.

1. BASAL CONDITIONS : to 4. GENERAL :

Same as in expt. no. 57(MAE) on page 73.

5. RESULTS :

(i) 1553 lb./ac. (ii) (a) 116.8 lb./ac. (b) 262.3 lb./ac. (iii) Interaction NK alone is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	1420	1529	1707	1473	1631	1552	1661	1413	1581	1552
F_1	1493	1539	1632	1502	1667	1495	1476	1569	1619	1555
Mean	1456	1534	1670	1487	1649	1524	1569	1491	1600	1553
K_0	1376	1723	1607	1392	1780	1536				
K_1	1528	1208	1740	1427	1534	1512				
K_2	1465	1673	1663	1642	1635	1525				
P_0	1359	1518	1585							
P_1	1518	1672	1758							
P_2	1493	1412	1666							

S.E. of difference of two
1. F marginal means = 31.8 lb./ac.
2. N, P or K marginal means = 87.4 lb./ac.
3. N, P or K means at the same level of F = 123.6 lb./ac.
4. F means at the same level of N, P or K = 105.8 lb./ac.
5. Means in the body of N×P, N×K or P×K tables = 151.4 lb./ac.

Crop :- Wheat *(Rabi)***.**
Site :- M.A.E. Farm, Umrala.

Ref :- Gj. 59(MAE).
Type :- 'M'.

Object :—Type 2—To study the long term effect of three levels each of N, P, K and two levels of bulky manure on three-course rotation crops.

1. BASAL CONDITIONS :

(i) (a) Wheat—Cotton — *Jowar*. (b) *Jowar*. (c) As per treatments. (ii) Medium black. (iii) 2.11.1959. (iv) (a) One ploughing, 2 harrowings. (b) Drilling. (c) 80 lb./ac. (d) Rows 9″ apart. (e) —. (v) Nil. (vi) N.P. 718 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) 25.98″. (x) 6.3.1960.

2. TREATMENTS : to 4. GENERAL :

Same as in expt. no. 57 (MAE) on page 73.

5. RESULTS :

(i) 657 lb./ac. (ii) (a) 90.9 lb./ac. (b) 117.9 lb./ac. (iii) P effect alone is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	648	590	598	566	577	693	592	587	658	612
F_1	698	698	709	642	727	736	698	704	703	702
Mean	673	644	654	604	652	714	645	645	680	657
K_0	666	568	701	585	671	679				
K_1	648	715	573	615	588	732				
K_2	705	649	687	612	697	732				
P_0	613	554	646							
P_1	661	685	610							
P_2	744	694	705							

S.E. of difference of two

1. F marginal means =24.7 lb./ac.
2. N, P or K marginal means =39.3 lb./ac.
3. N, P or K means at the same level of F =55.6 lb./ac.
4. F means at the same level of N, P or K =51.7 lb./ac.
5. Means in the body of N×P, N×K or P×K tables =68.1 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 54(SFT).**

Site :- Mahasana. **Type :- 'M'.**

Object :—Type 1—To study the effect of different doses and sources of N on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial—sandy loam—pH. 8.1. (iii) to (v) N.A. (vi) Mid. October. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March.

2. TREATMENTS :

0 =Control (no manure).
N_1 =20 lb./ac. of N as A/S
N_2 =40 lb./ac. of N as A/S
N''_1=20 lb./ac. of N as Urea
N''_2=40 lb./ac. of N as Urea

3. DESIGN :

(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat in the selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) N.A.

4. GENERAL :

(i) Normal. (ii) Black rust attack. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	N_1	N_2	N_1''	N_2''
Av. yield	1486	1688	1721	1707	1846

G.M. =1690 lb./ac. ; S.E./mean =40.3 lb./ac. No. of trials =27.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 55(SFT).**
Site :- Mahasana. **Type :- 'M'.**

Object :—Type V—To study the effect of different doses and sources of N on Wheat.

1. BASAL CONDITIONS : to 2. TREATMENTS :

Same as in expt. no. 54(SFT) type I on page 75.

3. DESIGN :

Same as in expt. no. 54(SFT) type I on page 75.

4. GENERAL :

(i) Normal. Partial lodging. (ii) Incidence of rust in about 15% of the experimental fields and in few cases there was slight damage by rats. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	N_1	N_2	N_1''	N_2''
Av. yield	1693	1878	2065	2065	2139

G.M. =1968 lb./ac. ; S.E./mean =44.5 lb./ac. and no. of trials =34.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 55(SFT).**
Site :- Mahasana. **Type :- 'M'.**

Object :—Type V—To study the effect of different doses and sources of N on Wheat.

1. BASAL CONDITIONS :

Same as in expt. no. 54(SFT) type I on page 75.

2. TREATMENTS :

0 =Control (no manure)
N_1 =20 lb./ac. of N as A/S
N_2 =40 lb./ac. of N as A/S
N_1'=20 lb./ac. of N as A/N
N_2'=40 lb./ac. of N as A/N

3. DESIGN :

Same as in expt. no. 54(SFT) type I on page 75.

4. GENERAL :

(i) Normal. Partial lodging. (ii) Incidence of rust in about 15% of the experimental fields and in few cases there was slight damage by rats. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	N_1	N_2	N_1'	N_2'
Av. yield	1774	2065	2121	2081	2170

G.M. =2042 lb./ac. ; S.E./mean =35.3 lb./ac. and no. of trials =31.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 54(SFT).**
Site :- Mahasana. **Type :- 'M'.**

Object :—Type II—To study the effect of different levels and types of N and P on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial—Sandy loam—pH 8.1. (iii) to (v) N.A. (vi) Mid. of October. (vii) Irrigated. (viii) and (ix) N.A. (x) Mid. of March.

2. TREATMENTS :

0 =Control (no manure)
P_1 =20 lb./ac. of P_2O_5 as Super
P_1N_1 =20 lb./ac. of P_2O_5 as Super+20 lb./ac. of N as A/S
P_1N_2 =20 lb./ac. of P_2O_5 as Super+40 lb./ac. of N as A/S
P_1N_1'=20 lb./ac. of P_2O_5 as Super+20 lb./ac. of N as A/N
P_1N_2'=20 lb./ac. of P_2O_5 as Super+40 lb./ac. of N as A/N

3. DESIGN :

Same as in expt. no. 54(SFT) type I on page 75.

4. GENERAL :

(i) Normal. (ii) Black rust attack. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	P_1	P_1N_1	P_1N_2	P_1N_1'	P_1N_2'
Av. yield	1479	1716	1762	1882	1808	1885

G.M.=1755 lb./ac. ; S.E./mean =61.7 lb./ac. and no. of trials =27.

Crop :- Wheat. **Ref :- Gj. 55(SFT)**
Site :- Mahasana. **Type :- 'M'.**

Object :—Type II—To study the effect of different levels of N and types of N and P on Wheat.

1. BASAL CONDITIONS : and 2. TREATMENTS :

Same as in expt. no. 54(SFT) type II on page 76.

3. DESIGN :

Same as in expt. no. 54(SFT) type I on page 75.

4. GENERAL :

(i) Normal. Partial lodging. (ii) Incidence of rust in about 15% of the experimental fields and in few cases there was slight damage by rats. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	P_1	P_1N_1	P_1N_2	P_1N_1'	P_1N_2'
Av. yield	1825	2028	2119	2209	2148	2278

G.M.=2101 lb./ac. ; S.E./mean=38.3 lb./ac. and no. of trials=33.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 54(SFT).**
Site :- Mahasana. **Type :- 'M'.**

Object :—Type IV—To study the effect of N, P and K on Wheat.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Alluvial—Sandy loam—pH. 8.1. (iii) to (v) N.A. (vi) Mid. of October. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) Mid. of March.

2. TREATMENTS :

0 =Control (no manure)
N_1 =20 lb./ac. of N as A/S.
N_1P_1 =20 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super.
N_1P_2 =20 lb./ac. of N as A/S+40 lb./ac. of P_2O_5 as Super.
$N_1P_1K_1$=20 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super+20 lb./ac. of K_2O as Pot. Sul.
$N_1P_1K_2$=20 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super+40 lb./ac. of K_2O as Pot. Sul.

3. DESIGN :

Same as in expt. no. 54(SFT) type I on page 75.

4. GENERAL :

(i) Normal, (ii) Black rust attack. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	N_1	N_1P_1	N_1P_2	$N_1P_1K_1$	$N_1P_1K_2$
Av. yield.	1549	1903	1920	1977	1879	1914

G.M.=1857 lb./ac. ; S.E./mean=46.9 lb./ac. and no. of trials = 27.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 55(SFT).**
Site :- Mahasana. **Type :- 'M'.**

Object :—Type IV—To study the effect of N, P and K on Wheat.

1. BASAL CONDITIONS and 2. TREATMENTS.

Same as in expt. no. 54 (SFT) type IV on page 77.

3. DESIGN :

Same as the expt. no. 54 (SFT) type I on page 75.

4. GENERAL :

(i) Normal. Partial lodging. (ii) Incidence of rust in about 15% of the experimental fields and in few cases there was slight damage by rats. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	N_1	N_1P_1	N_1P_2	$N_1P_1K_1$	$N_1P_1K_2$
Av. yield	1775	1986	2114	2218	2168	2204

G.M. =2078 lb./ac. ; S.E./mean =43.7 lb./ac. and no. of trials=31

Crop :-Wheat *(Rabi).* **Ref :- Gj. 54(SFT).**
Site :- Manavadav. **Type :- 'M'.**

Object :—Type I— To study the effect of different doses and sources of N on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Medium black—clayey loam—p.H. 8.3. (iii) to (v) N.A. (vi) Mid. of October. (vii) Irrigated. (viii) and (ix) N.A. (x) March.

2. TREATMENTS :

0 =Control.
N_1 =20 lb./ac. of N as A/S
N_2 =40 lb./ac. of N as A/S
N_1''=20 lb./ac. of N as Urea
N_2''=40 lb./ac. of N as Urea

3. DESIGN :

Same as in expt. no. 54 (SFT) type I on page 75.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield data. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	N_1	N_2	N_1''	N_2''
Av. yield	1312	1488	1628	1720	1789

G.M. =1587 lb./ac. S.E./mean =51.0 lb./ac. and no. of trials = 29.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 55(SFT).**

Site :- Manavadav. **Type :- 'M'.**

Object :—Type I—To study the effect of different doses and sources of N on Wheat.

1. BASAL CONDITIONS:

Same as in expt. no. 54 (SFT) type I on page 75.

2. TREATMENTS :

0 =Control
N_1 =20 lb./ac. of N as A/S
N_2 =40 lb./ac. of N as A/S
N_1' =20 lb./ac. of N as A/N.
N_2' =40 lb./ac. of N as A/N.

3. DESIGN : and 4. GENERAL :

Same as in expt. no. 54 (SFT) type 1 on page 75.

5. RESULTS :

Treatment	0	N_1	N_2	N_1'	N_2'
Av. yield	1199	1447	1709	1949	2205

G.M. =1702 lb./ac. S.E./mean =76.3 lb./ac. and no. of trials=32.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 54(SFT).**

Site :- Manavadav. **Type :- 'M'.**

Object :—Type II—To study the effect of different levels and types of N and P on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Medium black—clayey loam, p.H. 8.3. (iii) to (v) N.A. (vi) Mid. of October. (vii) Irrigated. (viii) and (ix) N.A. (x) March.

2. TREATMENTS :

0 =Control.
P_1 =20 lb./ac. of P_2O_5 as Super
P_1N_1 =20 lb./ac. of P_2O_5 as Super+20 lb./ac. of N as A/S
P_1N_2 =20 lb./ac. of P_2O_5 as Super+40 lb./ac. of N as A/S
P_1N_1''=20 lb./ac. of P_2O_5 as Super+20 lb./ac. of N as Urea.
P_1N_2''=20 lb./ac. of P_2O_5 as Super+40 lb./ac. of N as Urea.

3. DESIGN :

Same as in expt. no. 54 (SFT) type I on page 75.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Yield data. (iv) (a) 1953—1955. (b) No. (c) N.l. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatment	0	P_1	P_1N_1	P_1N_2	P_1N_1''	P_1N_2''
Av. yield	1289	1568	1723	2002	2099	2283

G.M : =1827 lb./ac. ; S.E./mean =79.0 lb./ac. and no. of trials=29.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 55 (SFT).**

Site :- Manavadav. **Type :- 'M'.**

Object :—Type II— To study the effect of different levels and types of N and P on Wheat.

1. BASAL CONDITIONS :

Same as in expt. no. 54 (SFT) type II on page 76.

2. TREATMENTS :

0 =Control.
P_1 =20 lb./ac. of P_2O_5 as Super.
P_1N_1 =20 lb./ac. of P_2O_5 as Super+20 lb./ac. of N as A/S.
P_1N_2 =20 lb./ac. of P_2O_5 as Super+40 lb./ac. of N as A/S.
P_1N_1' =20 lb./ac. of P_2O_5 as Super+20 lb./ac. of N as A/N.
P_1N_2' =20 lb./ac. of P_2O_5 as Super+40 lb./ac. of N as A/N.

3. DESIGN :

Same as in expt. no. 54 (SFT) type I on page 75.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—55. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

5 RESULTS :

Treatment	0	P_1	P_1N_1	P_1N_2	P_1N_1'	P_1N_2
Av. yield	1251	1498	1844	2195	2386	2537

G.M : =1952 lb./ac., ; S.E./mean =75.4 lb./ac. and no. of trials=29.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 54 (SFT).**

Site :- Paliyad (Gohilwad). **Type :- 'M'.**

Object :—Type I (a)—To study the effect of N and P_2O_5 on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy to clay loam. (iii) N.A. (iv) N.P.-715. (v) (a) N.A. (b) Drilled by 4 coultered seed drill. (c) 80 lb./ac. (d) Rows 9″ apart. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) End of March.

2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments.
(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 sources of N : S_1=A/S, S_2= A/S/N and S_3=Urea.
(3) 3 levels of P_2O_5 as triple Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
3 extra treatments : E_1=60 lb./ac. of N+40 lb./ac. of P_2O_5, E_2=40 lb./ac. of N+80 lb./ac. of P_2O_5 and E_3=60 lb./ac. of N+80 lb./ac. of P_2O_5. N as A/S and P_2O_5 as triple Super.
Nitrogenous fertilizers mixed with soil and broadcast just before sowing and mixed into the soil by running seed drill across the length of plots. P_2O_5 incorporated into the soil 9 days before sowing.

3. DESIGN :

(i) 3^3 Fact. confd.+3 extra treatments in each block.. (ii) (a) 12 plots/block : 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 29′×18¾′. (b) 26′×15¾′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of white flies in early stages of the crop, negligible % of top shoot borer and rat damage. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1781 lb./ac. (ii) 314.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

E_1=1735 lb./ac., E_2=1989 lb./ac. and E_3=1784 lb./ac.

	N_0	N_1	N_2	Mean	S_1	S_2	S_3
P_0	1853	2006	1409	1756	1772	1997	1499
P_1	1543	1331	1818	1564	1841	1537	1315
P_2	1750	2025	2134	1970	1904	2110	1895
Mean	1715	1787	1787	1763	1839	1881	1570
S_1	—	1873	1899				
S_2	—	1958	1850				
S_3	—	1531	1812				

S.E. of body of any table or any extra treatment =181.4 lb./ac.
S.E. of any marginal mean =104.7 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 55 (SFT).**
Site :- Paliyad. **Type :- 'M'.**

Object :—Type I (a)—To study the effect of N and P_2O_5 on Wheat.

1. BASAL CONDITIONS : to 3. DESIGN :

Same as in expt. no. 54 (SFT) type I (a) on page 80.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1977 lb./ac. (ii) 166.2 lb./ac. (iii) N effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

E_1=2257 lb./ac., E_2=2084 lb./ac. and E_3=2386 lb./ac.

Mean	N_0	N_1	N_2	Mean	S_1	S_2	S_3
P_0	1749	1803	2042	1865	1816	1886	1892
P_1	1539	1797	2166	1834	1963	1699	1840
P_2	1758	1935	2209	1967	1881	1925	2095
Mean	1682	1845	2139	1889	1887	1837	1942
S_1	—	1850	2175				
S_2	—	1729	2105				
S_3	—	1956	2136				

S.E. of body of any table or any extra treatment =96.0 lb./ac.
S.E. of any marginal mean =55.4 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 54(SFT).**

Site :- Paliyad. **Type :- 'M'.**

Object :—Type II (a)—To study the effect of different sources of N applied at different times on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Medium deep soil. (iii) Nil. (iv) N.P.-715. (v) (a) N.A. (b) Drilling by 5 coultered drill. (c) 80 lb./ac. (d) 9″. (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March 1955.

2. TREATMENTS :

All combinations of (1) and (2)+a control
   (1) 3 sources of 20 lb./ac. of N : S_1=A/S, S_2=A/S/N and S_3=Urea.
   (2) 2 times of application of N : T_1=at sowing and T_2=at first irrigation.
Fertilizers mixed with soil and broadcast.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 51×11¼′. (b) 48×8¼′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1803 lb./ac. (ii) 182.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control=1693 lb./ac.

	S_1	S_2	S_3	Mean
T_1	1715	1908	1715	1779
T_2	1826	1935	1831	1864
Mean	1770	1921	1773	1821

S.E. of marginal mean of S =52.6 lb./ac.
S.E. of marginal mean of T =64.4 lb./ac.
S.E. of body of table or control mean =91.0 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 55 (SFT).**

Site :- Paliyad. **Type :- 'M'.**

Object :—Type II (a)—To study the effect of different sources of N applied at different times on Wheat.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 54(SFT) type II above.

5. RESULTS :

(i) 1066 lb./ac. (ii) 132.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control=1082 lb./ac.

	S_1	S_2	S_3	Mean
T_1	1052	1034	1086	1057
T_2	1155	1023	1027	1068
Mean	1103	1028	1056	1062

S.E. of marginal mean of S =47.0 lb./ac.
S.E. of marginal mean of T =38.4 lb./ac.
S.E. of body of table or control mean =66.5 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 54 (SFT).**
Site :- Paliyad. **Type :- 'M'.**

Object :—Type IV—To study the effect of different doses and sources of P_2O_5 applied through different methods of application on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Medium black soil. (iii) Nil. (iv) N.P.-715. (v) (a) and (b) Drilling by 5 coultered seed drill. (c) 80 lb./ac. (d) 9″. (e) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) March 1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)+2 control.
(1) 2 levels of P_2O_5 : P_1=20 and P_2=40 lb./ac.
(2) 2 sources of P_2O_5 : S_1=Triple super and S_2=Ammo. Phos.
(3) 3 methods of applications : M_1=Broadcast before final cultivation, M_2=Band placement and M_3= 7$\frac{1}{2}$″ below the seeds.

N was equalised by broadcasting A/S to make up 30 lb./ac. of N.

3. DESIGN:

(i) and (ii) R.B.D. in 3 replications with 14 plots/replication. (iii) (a) 36′×15′. (iv) 33′×12′. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) N.A. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1637 lb./ac. (ii) 507.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control =1607 lb./ac.

	M_1	M_2	M_3	Mean	S_1	S_2
P_1	1771	1639	1491	1634	1609	1659
P_2	1709	1858	1385	1651	1457	1844
Mean	1740	1748	1438	1642	1533	1751
S_1	1522	1801	1277			
S_2	1959	1696	1599			

S.E. of marginal mean of M =146.5 lb./ac.
S.E. of marginal mean of P or S =119.6 lb./ac.
S.E. of body of P×M or S×M tables or of control mean =207.2 lb./ac.
S.E. of body of P×S table =169.2 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 55(SFT).**
Site :- Paliyad. **Type :- 'M'.**

Object :—Type IV—To study the effect of different doses and sources of P_2O_5 applied through different methods of application on Wheat.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 54(SFT) type IV as above.

5. RESULTS :

(i) 1865 lb./ac. (ii) 370.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control=1723 lb./ac.

	M_1	M_2	M_3	Mean	S_1	S_2
P_1	1760	1809	1971	1847	1717	1976
P_2	2013	1879	1901	1931	1914	1948
Mean	1886	1844	1936	1889	1815	1962
S_1	1839	1864	1743			
S_2	1933	1825	2129			

S.E. of marginal means of M =107.1 lb./ac.
S.E. of marginal means of P or S = 87.4 lb./ac.
S.E. of body of P×M or S×M tables or of control mean =151.4 lb.lac.
S.E. of body of P×S table =185.5 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 54(SFT).**
Site :- Paliyad. **Type :- 'M'.**

Object :—Type VI—To study the residual effect of phosphate applied in different doses on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Medium black soil. (iii) 1.25 lb./plot of A/S applied to all treatments except treatment No. 1. (vi) N.P.-715. (v) (a) N.A. (b) Drilling with 5 coultered seed drill. (c) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) and (ix)N.A. (x) Mid March.

2. TREATMENTS :

Year	1	2	3	4	5	6	7	8	9	10	11	12
1	0	0	0	1	2	0	0	0	0	$\frac{1}{2}$	1	2
2	0	0	0	0	0	1	2	0	0	$\frac{1}{2}$	1	2
3	0	0	0	0	0	0	0	1	2	$\frac{1}{2}$	1	2
4	0	0	0	1	2	0	0	0	0	$\frac{1}{2}$	1	2

Unit dressing of 20 lb./ac. of P_2O_5 applied as above and residual effect of phosphate subsequently studied. Basal dressing of N in all plots except for treatment 1.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) N.A. (iv) (a) 36′×15′. (b) 33′×12′. (v) N.A. (iv) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 2488 lb./ac. (ii) 185.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1 (A)	10 (B)	4,11 (C)	5,12 (D)	2,3,6 to 9 (E)
Av. yield	2487	2676	2450	2645	2418

S.E./mean for A or B =131.3 lb./ac. S.E./mean for C or D=92.9 lb./ac. S.E./mean (E) =53.6 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 55(SFT).**
Site :- Paliyad. **Type :- 'M'.**

Object :—Type VI—To study the residual effect of phosphate applied in different doses on Wheat.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 54(SFT) type VI above.

5. RESULTS :

(i) 2200 lb./ac. (ii) 324.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8	9	10	11	12
Av. yield	1920	2219	2219	1909	2238	2150	2476	2219	2219	2334	2364	2187

S.E./mean of treatments other than (2,3,8,9) =229.3 lb./ac.
S.E./mean of 2,3, 8 and 9 =114.7 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 54(SFT).**
Site :- Paliyad. **Type :- 'M'.**

Object :—Type IX—To study the effect of N, P and F.Y.M. applied singly and in combination on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy to clay loam. (iii) N.A. (iv) N.P.-715. (v) (a) Ploughing and harrowing. Seed covered by running a long blade harrow. (b) 5 coultered seed drill. (c) 80 lb./ac. (d) 9″. (e) —. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) End of March 1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
(3) 3 levels of F.Y.M. : $F_0=0$, $F_1=10$ and $F_2=20$ C.L./ac.

F.Y.M. broadcast on 2.11.1954, Super ploughed in while A/S was broadcast immediately before sowing of wheat.

3. DESIGN :

(i) and (ii) 3^3 confd. (iii) 1 repln. (iv) (a) $24\frac{1}{4}'\times22\frac{1}{2}'$. (b) $21\frac{1}{4}'\times19\frac{1}{2}'$. (v) N.A. (vi) Yes.

4. GENERAL

(i) to (vii) N.A.

5. RESULTS :

(i) 1936 lb./ac. (ii) 134.7 lb./ac. (iii) Only N effect is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	F_0	F_1	F_2
N_0	1772	1768	1840	1793	1744	1790	1846
N_1	1951	1988	2040	1993	2035	1920	2024
N_2	1932	2114	2024	2023	1892	2035	2143
Mean	1885	1957	1968	1936	1890	1915	2004
F_0	1828	1901	1942				
F_1	1855	1923	1967				
F_2	1972	2046	1995				

S.E. of any marginal mean =44.9 lb./ac.
S.E. of body of any table =77.8 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 55(SFT).**
Site :- Paliyad. **Type :- 'M'.**

Object :—Tgpe IX—To study the effect of N,P and F.Y.M. applied singly and in combination on Wheat.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 54(SFT) type IX on page 85.

5. RESULTS :

(i) 1345 lb./ac. (ii) 156.6 lb./ac. (iii) Only P and F effects are significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	F_0	F_1	F_2
N_0	1113	1326	1247	1229	1023	1282	1382
N_1	1221	1290	1547	1352	1190	1301	1566
N_2	1257	1500	1607	1455	1285	1549	1531
Mean	1197	1372	1467	1345	1166	1377	1493
F_0	982	1191	1324				
F_1	1243	1313	1577				
F_2	1365	1613	1500				

S.E. of any marginal mean =52.2 lb./ac.
S.E. of body of any table =90.4 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(69).**
Site :- Agri. Res. Stn., Kholwad. **Type :- 'MV'.**

Object :—To find out suitable doses of manures for different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton in 1958-59 ; and Sann in *kharif* 1959-60. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 17.11.1959 and 25.11.1959. (iv) (a) 1 ploughing and 4 harrowings. (b) Dibbling. (c) N.A. (d) 12″×4″. (e) 4 seeds/dibble. (v) 5 C.L./ac. of F.Y.M. broadcast on 9.6.1959. (vi) As per treatments. (vii) Irrigated. (viii) 2 interculturings. (ix) 106.5″ (June to Oct. 1959). (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.
(2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=20$ lb./ac.

Sub-plot treatments :

4 varieties : V_1=N.P.-718, V_2=Hy 65, V_3=N-345 and V_4=N-917.

N applied as A/S in bunds on 4.12.1959 and 8.1.1960 ; P_2O_5 applied as super in rows on 4.12.1959.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 21′×36′. (b) 15′×30′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—contd. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1176 lb./ac. (ii) (a) 279.8 lb./ac. (b) 114.2 lb./ac. (iii) Main effect of N alone is significant. Other effects and interactions are not significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	Mean	P_0	P_1
N_0	757	750	814	788	777	827	727
N_1	1026	1197	1153	1289	1166	1182	1149
N_2	1477	1595	1578	1694	1586	1418	1753
Mean	1086	1181	1182	1257	1176	1142	1210
P_0	1054	1150	1177	1189			
P_1	1118	1211	1186	1325			

S.E. of difference of two

1. N marginal means = 98.9 lb./ac.
2. P marginal means = 80.8 lb./ac.
3. V marginal means = 46.6 lb./ac.
4. V means at the same level of N = 80.8 lb./ac.
5. V means at the same level of P = 65.9 lb./ac.
6. N means at the same level of V =121.1 lb./ac.
7. P means at the same level of V = 98.9 lb./ac.

S.E. of body of N×P table =139.9 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 54 (SFT).**

Site :- Paliyad. **Type :- 'MV'.**

Object :—Type VIII—To study the effect of N and P_2O_5 on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Medium black soils of trap and gneissic origin. (iii) N.A. (iv) As per treatments. (v) (a) N.A. (b) Drilled by 5 coultered seed drill. (c) 80 lb./ac. for V_1 and V_3 and 100 lb./ac. for V_2. (d) Rows 9″ apart. (e) —. (vi) N.A. (vii) Irrgated. (viii) N.A. (ix) N.A. (x) End of March 1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N_0=0, N_1=20 and N_2=40 lb./ac.
(2) 3 levels of P_2O_5 as triple super : P_0=0, P_1=20 and P_2=40 lb./ac.
(3) 3 varieties : V_1=White katha, V_2=Kenphad and V_3=N.P.-715.

Triple Super incorporated into the soil 6 days before sowing and A/S broadcasted just before sowing.

3. DESIGN :

(i) 3^3 Fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 36′×15′. (b) 33′×12′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1874 lb./ac. (ii) 182.5 lb./ac. (iii) Only N effect is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	V_1	V_2	V_3
N_0	1672	1648	1719	1680	1715	1724	1600
N_1	1870	2078	1892	1947	2045	1870	1925
N_2	2153	2029	1800	1994	2027	1985	1971
Mean	1898	1918	1804	1874	1929	1860	1832
V_1	1959	1977	1851				
V_2	1877	1866	1836				
V_3	1859	1912	1725				

S.E. of any marginal mean = 60.8 lb./ac.
S.E. of body of any table =105.4 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 55(SFT) .**
Site :- Paliyad. **Type :- 'MV'.**

Object :—Type VIII—To study the effect of N and P_2O_5 on different varieties of Wheat.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 54(SFT) on page 87.

5. RESULTS :

(i) 1398 lb./ac. (ii) 194.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	V_1	V_2	V_3
N_0	1334	1346	1376	1352	1544	1268	1245
N_1	1337	1443	1488	1423	1467	1386	1415
N_2	1195	1377	1688	1420	1334	1325	1601
Mean	1289	1389	1517	1398	1448	1326	1421
V_1	1416	1283	1645				
V_2	1273	1402	1303				
V_3	1177	1481	1604				

S.E. of any marginal mean = 64.9 lb./ac.
S.E. of body of any table =112.4 lb./ac.

Crop :-Wheat. *(Rabi)*. **Ref :-Gj. 54(11).**
Site :-Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To study the economic seed rate for irrigated Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajri* or Groundnut—Wheat—Cotton. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 26.11.1954. (iv) (a) Two harrowings. (b) Drilling. (c) As per treatments. (d) 9″ apart. (e) N.A. (v) 5 C.L./ac. of F.Y.M. in Oct. (vi) Kenphad R.R. (medium). (vi) Irrigated. (viii) Weeding once. (ix) Nil. (x) 25.3.1955.

2. TREATMENTS :

5 seed rates :—R_1=40, R_2=60, R_3=80, R_4=100 and R_5=120 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) 5. (iii) 5. (iv) (a) 26′×13.5′. (b) 21′×9.75′. (v) 5 rows on either side of the block and one row on either side of each plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1955. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1662 lb./ac. (ii) 155.3 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. yield	1604	1753	1561	1718	1675

S.E. /mean =71.1 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 55(7).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To study the economic seed rate for irrigated Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajri*—Groundnut—Wheat—Cotton. (b) N.A. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli (iii) 7.11.1955. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) Between rows—9", Between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) Kenphad R.R. (medium). (vii) Irrigated. (viii) One weeding. (ix) 15.32". (x) 22.3.1956.

2. TREATMENTS :

Same as in expt. no. 54 (11) on page 88.

3. DESIGN :

(i) R.B.D. (ii) 5. (3) 5. (iv) (a) 26'×13½'. (b) 21'×9¾'. (v) 2½'×1'10½". (vi) Yes.

4. GENERAL :

(i) Germination and initial growth quite good. (ii) Foot-rot disease observed at few places, showing white patches of dry immature plants. (iii) Grain yield. (iv) (a) 1951—1955. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2368 lb./ac. (ii) 264.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. yield	2274	2298	2357	2487	2423

S.E./mean =118.0 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 58(97).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To find out the optimum date of sowing for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) As per treatments. (iv) (a) One harrowing. (b) Drilling. (c) 80 lb./ac. (d) 9" between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) K.C.N.-133. (vii) Irrigated. (viii) Two interculturings. (ix) 1.13". (x) 2, 8 and 16.3.1959.

2. TREATMENTS :

5 dates of sowings : D_1=28.10.1958, D_2=4.11.1958, D_3=11.11.1958, D_4=18.11.1958 and D_5=25.11.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 80'×10.25'. (b) 77'×8.25'. (v) 1.5'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) No reason given for high yields.

5. RESULTS :

(i) 2265 lb./ac. (ii) 123.4 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	2308	2497	2239	2128	2154

S.E./mean =61.7 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 57(5).**
Site :- Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To study the residual effect of mixed cropping in *Kharif* on the yield of succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) *Bajri* and Groundnut—Wheat. (b) *Bajri* and Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 2.11.1957. (iv) (a) One ploughing and three harrowings. (b) Drilling. (c) 60 lb./ac. (d) Between row—9″. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 27.42″. (x) 9 and 10.3.1958.

2. TREATMENTS :

1. Separate rows of *Bajri* and Groundnut in 1 : 1 proportion.
2. Separate rows of *Bajri* and Groundnut in 1 : 2 proportion.
3. Separate rows of *Bajri* and Groundnut in 1 : 3 proportion.
4. *Bajri* alone
5. Groundnut alone

Treatments applied in *Kharif* 1957-58.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 94′×21′. (b) 90′×18′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 803 lb./ac. (ii) 79.54 lb./ac. (iii) Treatments differ significantly. (iv) Av yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	794	743	777	769	931

S.E./mean = 39.66 lb./ac.

Crop :-Wheat *(Rabi).* **Ref :-Gj. 58(98).**
Site :-Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To find out the residual effect of mixed cropping in *Kharif* on succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 4.12.1958. (iv) (a) One harrowing. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) K.C.N.—133. (vii) Irrigated. (viii) Two interculturings. (ix) 1.13″. (x) 3.4.1959.

2. TREATMENTS :

Same as in expt. no. 57 (5) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 92′×21′. (b) 90′×15′. (v) 1′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1140 lb./ac. (ii) 80.80 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	960	1093	1151	993	1504

S.E./mean =40.40 lb./ac.

Crop :-Wheat *(Rabi)*. **Ref :- Gj. 59(92).**

Site :- Agri. Res. Stn., Amreli. Type :- 'C'.

Object :—To find out the residual effect of mixed cropping in *Kharif* on yield of succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 25.11.1959. (iv) (a) One ploughing, two harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9" between rows. (e)—. (v) 5 C.L./ac. of F.Y.M. (vi) K.C.N.—133. (vii) Irrigated. (viii) Three to four interculturings and two weedings. (ix) 12.99". (x) 14.3.1960.

2. TREATMENTS :

Same as in expt. no. 57 (5) on page 90.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 92'×21'. (b) 90'×15'. (v) 1'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 859 lb./ac. (ii) 65.37 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	788	854	943	699	1010

S.E./mean =32.69 lb./ac.

Crop :- Wheat. Ref :- Gj. 54(3).

Site :- Agri. Res. Stn., Arnej. Type :- 'C'.

Object :—To find out the best preparatory tillage for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Gram—Wheat. (b) Gram. (c) Nil. (ii) (a) Medium to deep black. (b) Refer soil analysis, Arnej (iii) 25.10.1954. (iv) (a) and (b) N.A. (c) 40 lb./ac. (d) Between rows—12". (e) N.A. (v) Nil. (vi) A—206 (medium). (vii) Unirrigated. (viii) Weeding. (ix) 24.10". (x) 6.3.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) No. of harrowings : H_1=2, H_2=3, H_3=4 and H_4=5.
(2) Ploughings : P_0= none and P_1=1 ploughing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 113'×14'. (b) 109'×10'. (v) 2'×2'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1955. (b) and (c) No. (v) (a) and (b) N.A. (vi) Cloudy weather affected the yield. (vii) Nil.

5. RESULTS :

(i) 546 lb./ac. (ii) 81.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	H_1	H_2	H_3	H_4	Mean
P_0	441	523	623	574	540
P_1	593	570	513	530	552
Mean	517	546	568	552	546

S.E. of H marginal mean =28.8 lb./ac.
S.E. of P marginal mean =20.4 lb./ac.
S.E. of body of table =40.8 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55(1).**
Site :- Agri. Res. Stn., Arnej. **Type :- 'C'.**

Object :—To find out the best preparatory tillage for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Gram—Wheat. (b) Gram. (c) Nil. (ii) (a) Medium to deep black. (b) Refer soil analysis, Arnej. (iii) 28.10.1955. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) Between rows—12″. (e) N.A. (v) Nil. (vi) A—206. (vii) Unirrigated. (viii) Weeding. (ix) 26.10″. (x) 1.3.1955.

2. TREATMENTS :

Same as in expt. no. 54(3) on page 91.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 113′×112′. (iii) 4. (iv) (a) 113′×14′. (b) 109′×10′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) Due to continuous rain in the first fortnight of September no adequate tillage operation were carried out, which affected the growth of the crop. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1955. (b) and (c) No. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 410 lb./ac. (ii) 81.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	H_1	H_2	H_3	H_4	Mean
P_0	371	433	399	445	412
P_1	388	391	391	457	407
Mean	380	412	395	451	401

S.E. of H marginal mean =28.7 lb./ac.
S.E. of P marginal mean =20.3 lb./ac.
S.E. of body of table =40.6 lb./ac.

Crop :-Wheat. **Ref :- Gj. 54(2).**
Site :- Agri. Res. Stn., Arnej. **Type :- 'C'.**

Object :—To find out suitable spacing and economic seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Wheat. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Medium to deep black. (b) Refer soil analysis, Arnej. (iii) 24.10.1954. (iv) (a) Four harrowings. (b) Drilled. (c) to (e) N.A. (v) Nil. (vi) A—206 (medium). (vii) Unirrigated. (viii) Nil. (ix) 24.10″. (x) 11.3.1955.

2. TREATMENTS :

Main-plot treatments :

3 seed rates : $R_1=30$, $R_2=40$ and $R_3=50$ lb./ac.

Sub-plot treatments :

2 spacings between rows : $S_1=9''$ and $S_2=12''$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot : 84′×63′ ; sub-plot : 21′×42′. (b) 15′×36′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1955. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 283 lb./ac. (ii) (a) 71.80 lb./ac. (b) 47.59 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	Mean
S_1	260	251	337	283
S_2	278	260	312	283
Mean	269	256	324	283

S.E. of difference of two

1. R marginal means = 29.31 lb./ac.
2. S marginal means = 15.86 lb./ac.
3. S means at the same level of R = 27.48 lb./ac.
4. R means at the same level of S = 35.17 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55 (107).**

Site :- Agri. Res. Stn., Bhachau. **Type :- 'C'.**

Object :—To find out whether drilling is superior to broadcasting of seeds.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy. (b) Refer soil analysis, Bhachau. (iii) 3.11.1955. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) As per treatments. (e) —. (v) N.A. (vi) N.P.—718 (medium). (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

3 methods of sowing : S_1=Broadcasting, S_2=Drilling at 9″ spacing and S_3=Drilling at 18″ spacing.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 53′×33′. (b) 50′×30′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1955—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1238 lb./ac. (ii) 169.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3
Av. yield	1280	1259	1176

S.E./mean =59.75 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(128).**

Site :- Agri. Res. Stn., Bhachau. **Type :- 'C'.**

Object :—To find out whether drilling is superi or to broadcasting of seed for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy. (b) Refer soil analysis, Bhachau. (iii) N.A. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) As per treatments. (e) —. (v) N.A. (vi) N.P.—718 (medium). (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(107) on page 93.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 45′×27′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1149 lb./ac. (ii) N.A. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3
Av. yield	1228	1118	1100

S.E./mean =N.A.

Crop :- Wheat. **Ref :- Gj. 54(19).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'C'.**

Object :—To find out suitable spacing and seedrate for Wheat.

1. BASAL CONDITIONS :

(i) (a) Fallow—wheat—cotton—wheat. (b) Cotton. (c) 8 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 21.10.1954. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) Between rows—As per treatments, Between plants—irregular. (e) N.A. (v) 7 C.L./ac. of F.Y.M. broadcast on 1 and 2.6.1954. (vi) Kenphad. (vii) Unirrigated. (viii) Nil. (ix) 0.4″. (x) 12.2.1955.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=18″, S_2=24″ and S_3=27″.

Sub-plot treatments :

3 seed rates : R_1=30, R_2=40 and R_3=50 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39′×27′, 40′×27′ and 40.5′×27′ for 18″, 24″ and 27″ spacings respectively. (b) 36′×21′. (v) One row on either side and 3′ at each end. (vi) Yes.

4. GENERAL :

(i) Not uniform. (ii) Stem borers affected the crop to a little extent. (iii) Grain and chaff yield. (iv) (a) 1952—1955. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 467 lb./ac. (ii) (a) 198.9 lb./ac. (b) 71.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	400	560	490	483
R_2	436	479	387	434
R_3	442	562	449	484
Mean	426	533	442	467

S.E. of difference of two

1. S marginal means =66.3 lb./ac.
2. R marginal means =23.7 lb./ac.
3. R means at the same level of S =40.9 lb./ac.
4. S means at the same level of R =74.3 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55(9).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'C'.**

Object :—To find out suitable spacing and seedrate for wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Black cotton soil. (b) N.A. (iii) 22.10.1955. (iv) (a) Four harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) K—25. (vii) Unirrigated. (viii) 2 interculturings. (ix) 31.65″. (x) 26.2.1956.

2. TREATMENTS :

Same as in expt. no. 54(19) on page 94.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36′×21′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) No cause has been given for the low yield.

5. RESULTS :

(i) 55 lb./ac. (ii) (a) 34.74 lb./ac. (b) 20.11 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	74	51	36	54
R_2	57	84	45	62
R_3	58	60	28	49
Mean	63	65	36	55

S.E. of difference of two

1. S marginal means =11.58 lb./ac.
2. R marginal means = 6.70 lb./ac.
3. R means at the same level of S =11.61 lb./ac.
4. S means at the same level of R =14.97 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(56).**

Site :- Agri. Res. Stn., Halvad. **Type :-'C'.**

Object :—To compare different tillage operations for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) 20 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 16.11.1958. (iv) (a) As per treatments. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) 200 lb./ac. of A/S+200 lb./ac. of manure mixture+100 lb./ac. of P_2O_5 broadcasted on 6.11.1958 and 10 C.L./ac of F.Y.M. on 2.11.1958. (vi) N.P.—710. (vii) Irrigated. (viii) Three interculturings. (ix) N.A. (x) 12.3.1959.

2. TREATMENTS:

Main-plot treatments :

2 methods of cultivation : M_0=no cultivation by drill after soaking dose and before sowing and M_1= cultivation by drill after soaking dose and before sowing.

Sub-plot treatments :

5 cultural operations : C_0=no operation (control), C_1=one ploughing with mould board plough, C_2= one ploughing with local plough, C_3=two ploughings with local plough and C_4=one harrowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 40′×14′. (b) 34′×9′. (v) 3′×2.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and *kucho* yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 671 lb./ac. (ii) (a) 176.4 lb./ac. (b) 112.8 lb./ac. (iii) Only C effect is significant. (iv) Av. yield of grain in lb./ac.

	C_0	C_1	C_2	C_3	C_4	Mean
M_0	501	690	673	780	593	647
M_1	623	681	709	811	653	695
Mean	562	686	691	796	623	671

S.E. of difference of two

1. M marginal means = 64.4 lb./ac.
2. C marginal means = 65.1 lb./ac.
3. C means at the same level of M = 92.1 lb./ac.
4. M means at the same level of C =104.6 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(163).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To compare different tillage operations for Wheat.

1. BASAL CONDITIONS :

(i) (a) Legumes—cereal—cotton. (b) *Bajra*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 16.11.1958. (iv) (a) As per treatments. (b) Drilling. (c) 60 lb./ac. (d) 24″. (e) —. (v) 200 lb./ac. of A/S+200 lb./ac. of manure mixture+100 lb./ac. of Super. (vi) N.P.—710. (vii) Irrigated. (viii) Three weedings. (ix) About 13″. (x) 12.3.1959, 1.4.1959 and 2.4.1959.

2. TREATMENTS :

1. One ploughing with mould board plough.
2. One ploughing with local plough.
3. Two ploughings with local plough.
4. One harrowing.
5. Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 40′×14′. (b) 34′×9′. (v) 3′×2.5′. (vi) Yes.

4. GENERAL :

(i) Moderate. (ii) Light attack of rust. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) Junagadh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 647.4 lb./ac. (ii) 145.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	690	673	780	593	501

S.E./mean =83.83 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55(106).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To study the effect of interculturings on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Groundnut—wheat—cotton. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 13.11.1955. (iv) (a) Nil. (b) Drilling. (c) 80 lb./ac. (d) 9″ between rows. (e) —. (v) Nil. (vi) N.P.—710. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 7.3.1956.

2. TREATMENTS :

No. of interculture : $C_0=0$, $C_1=1$ and $C_2=2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 269 lb./ac. (ii) 40.28 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C_0	C_1	C_2
Av. yield	281	242	283

S.E./mean =14.24 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 54(42).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To compare different methods of sowing Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann as G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 15.11.1954. (iv) (a) One ploughing, 2 harrowings and 3 cultivations by drill. (b) As per treatments. (c) 40 lb./ac., 120 lb./ac. and 80 lb./ac. for different methods of sowing. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.P.-710 (medium). (vii) Irrigated. (viii) Two weedings. (ix) Nil. (x) 5.3.1955.

2. TREATMENTS :

1. Drilling by cultivator's method.
2. Dibbling at 12″×4″ spacing.
3. Drilling with 9″ spacing between two lines.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 66′×23′. (b) 60′×17′. (v) Four rows along length and 3′ along breadth. (vi) Yes.

4. GENERAL :

(i) Satisfactory. No lodging. (ii) Nil. (iii) Height of plant, length of earhead, no. of earheads, no. of spikes/earhead and grain yield. (iv) (a) N.A. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 456.6 lb./ac. (ii) 60.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	520.6	374.3	474.9

S.E./mean =24.34 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 55(28).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To compare different methods of sowing Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 200 lb./ac. of manure mixture +200 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 5, 6.11.1955. (iv) (a) Three harrowings. (b) As per treatments. (c) 100, 60 and 20 lb./ac. for treatments S_1, S_2 and S_3 respectively. (d) 9″×12″. (e) —. (v) 200 lb./ac. of A/S+200 lb./ac. of manure mixture +222 lb./ac. of P_2O_5 broadcast. (vi) N.P.-710. (vii) Irrigated. (viii) One hand interculting. (ix) 13.75″. (x) 4, 17 and 19.3.1956. for treatments S_1, S_2 and S_3 respectively.

2. TREATMENTS :

1. Cultivator's method : Sowing in three directions within the same area.
2. Improved method : Sowing with 5 coultered drill in one direction only.
3. Dibbling with 12″×4″ spacing.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1925 lb./ac. (ii) 94.38 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	1806	2064	1906

S.E./mean = 38.54 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 56(28).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To compare different methods of sowing Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Lucerne. (c) 50 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 24.11.1956. (iv) (a) One harrowing. (b) As per treatments. (c) 100,80 and 60 lb./ac. for treatments 1, 2 and 3 respectively. (d) 9″ between rows. (e) —. (v) 200 lb./ac. of manure mixture+30 lb./ac. of P_2O_5+120 lb./ac. of A/S broadcast. (vi) N.P.—710. (vii) Irrigated. (viii) Nil. (ix) 33.75″. (x) 13 to 18.3.1957.

2. TREATMENTS :

Same as in expt. no. 55 (28) on page 98.

3. DESIGN :

(i) R.B.D. (ii)(a) 3. (b) N.A. (iii) 6. (iv) (a) 51′×13′. (b) 45′×6.75′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1468 lb./ac. (ii) 165.6 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	1449	1597	1357

S.E./mean =67.63 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(32).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out whether line sowing is economically advantageous over local method of sowing.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann as G.M. (c) 200 lb./ac. of single-super. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 6.11.1957. (iv) (a) Ploughings, harrowings and cultivation by drill. (b) to (e) N.A. (v) 200 lb./ac of single-super before soaking ; 200 lb./ac. of manure mixture ; 200 lb./ac. of A/S and 200 lb./ac. of castor cake broadcasted before sowing. (vi) N.P.-710 (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Drilling with hand drill at 6″ spacing between two rows.
2. Drilling with hand drill at 9″ spacing between two rows.
3. Drilling with hand drill at 12″ spacing between two rows.
4. Line sowing by drill at 9″ spacing.
5. Sowing by local method, with 18″ distance between rows, by running the drill 3 times in different directions.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 42′×13′. (b) 36′×6¾′. (v) 3 rows on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Height of plant, no and length of earhead, no. of spikes/earhead, grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1891 lb./ac. (ii) 204.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	1867	2046	1913	1762	1870

S.E./mean =117.9 lb./ac.

Crop :- Wheat. **Ref :- Gj. 54(44).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To compare different dates of sowing Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann as G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Ploughing, harrowing and cultivation three times after soaking dose. (b) Drilling. (c) 80 lb./ac. (d) 9″ between two lines. (e) N.A. (v) Nil. (vi) N.P.-710. (vii) Irrigated. (viii) Two interculturings by hand with *koddi* and one weeding in D_3 and D_4 plots. (ix) Nil. (x) 6, 16, and 25.2.1955, 5.3.1955 and 11.3.1955 for treatments D_1 to D_5 respectively.

2. TREATMENTS :

5 dates of sowing : D_1=15.10.1954, D_2=24.10.1954, D_3=2.11.1954, D_4=11.11.1954 and D_5=20.11.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 66′×23′. (b) 60′×17′. (v) Four rows along length and 3′ along breadth. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plant and length of earhead in inches, no. of grain/earhead and grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b)N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 323.9 lb./ac. (ii) 40.14 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	236.9	294.2	344.3	359.7	384.5

S.E./mean =20.07 lb./ac.

Crop :- Wheat. **Ref :- Gj. 55(30).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To compare different dates of sowing Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 18 lb./ac. of N. (ii) (a) Medium black. (b) Refer soil analysis, Halvad (iii) As per treatments. (iv) (a) Two harrowings. (b) Drillings. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) 200 lb./ac. of A/S+200 lb./ac. of manure mixture +222 lb./ac. of P_2O_5 broadcast. (vi) N.P.-710. (vii) Irrigated. (viii) Nil. (ix) 13.75″. (x) D_1, D_2 and D_3—21.3.1956 ; D_4 and D_5—24.3.1956.

2. TREATMENTS :

5 dates of sowing : D_1=27.10.1955, D_2=6.11.1955, D_3=16.11.1955, D_4=26.11.1955 and D_5=6.12.1955.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 51′×13.5′. (b) 360 sq. ft. (Dimensions N.A.) (v) N.A. (v) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1649 lb./ac. (ii) 173.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	1497	1887	1856	1474	1530

S.E./mean =77.67 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(30).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To compare different dates of sowing Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) One ploughing and 1 harrowing. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) 125 lb./ac. of manure mixture+100 lb./ac. of A/S broadcasted and 185 lb./ac. of P_2O_5 drilled. (vi) N.P.—710. (vii) Irrigated. (viii) Nil. (ix) 33.75″. (x) 7.3.1957, 11.3.1957, 15.3.1957 and 26.3.1957 for D_1 to D_4 respectively.

2. TREATMENTS:

4 dates of sowing : D_1=6.11.1956, D_2=16.11.1956, D_3=26.11.1956 and D_4=6.12.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 51′×13′. (b) 45′×6.75′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1577 lb./ac. (ii) 160.0 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4
Av. yield	1568	1608	1623	1509

S.E./mean =71.54 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(34).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To study the effect of different *kharif* crops on the yield of succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) 100 lb./ac. of A/S to non-legumes and 100 lb./ac. of single super to legumes. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 9.11.1957. (iv) (a) Ploughing, harrowing, and cultivation by drill. (b) Drilling. (c) to (e) N.A. (v) 200 lb./ac. of single super before soaking dose. Broadcasting 200 lb./ac. of A/S and 200 lb./ac. of manure mixture before sowing. (vi) N.P.—710. (vii) Irrigated. (viii) Weedings. (ix) Nil. (x) N.A.

2. TREATMENTS :

Wheat to be sown after following *kharif* crops : C_0=Fallow, C_1=Sann (G.M.), C_2=*Bajra*, C_3=*Bajra+Til*, C_4=*Til*, C_5=*Guar* (G.M.), C_6=*Bajra+Mug*, C_7=*Mug* and C_8=Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 1/77.79 th acre. (b) 1/142.35 th acre. (v) 3 rows on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plant, no. and length of earheads, no. of spikes/earhead, grain and fodder yield. (iv) (a) 1956—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1495 lb./ac. (ii) 146.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C_0	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8
Av. yield	1189	1371	1370	1363	1676	1556	1497	1599	1836

S.E./mean =73.4 lb /ac.

Crop :- Wheat. **Ref :- Gj. 58(25).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To study the effect of different *kharif* crops on the yield of succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Legume—cereal—cotton. (b) As per treatments. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 10.11.1958. (iv) (a) Two harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) 200 lb./ac. of manure mixture+200 lb./ac. of A/S+100 lb./ac. of Super. (vi) N.P.—710. (vii) Irrigated. (viii) Two weedings. (ix) About 13″. (x) 28.2.1959, 9, 10 and 12.3.1959.

2. TREATMENTS :

Wheat to be sown after following *kharif* crops : C_0=Fallow, C_1=Sann green, C_2=*Bajra*, C_3=*Bajra+Til* C_4=*Til*, C_5=*Guar* (G.M.), C_6=*Bajra+Mug*, C_7=*Mug*, C_8=Groundnut, C_9=Cotton, C_{10}=Cotton+Groundnut and C_{11}=Cotton+*Guar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 40′×14′. (b) 34′×9′. (v) 3′×2.5′. (vi). Yes.

4. GENERAL :

(i) Good. (ii) Light attack of rust. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Junagadh. (b) Nil. (vi) N.A. (vii) Data for treatments C_9, C_{10} and C_{11} is not available.

5. RESULTS :

(i) 1050 lb./ac. (ii) 245.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C_0	C_1	C_2	C_3	C_4	C_5	C_6	C_7
Av. yield	1033	1214	986	827	947	1562	836	1040

Treatment	C_8	C_9	C_{10}	C_{11}
Av. yield	1003	N.A.	N.A.	N.A.

S.E./mean =122.8 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(31).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the effect of different cultivation practices on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Mug*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 30.10.1957. (iv) (a) As per treatments. (b) to (e) N.A. (v) 200 lb./ac. of Super before sowing. Broadcasting of 200 lb./ac. of A/S and 200 lb./ac. of manure mixture before sowing. (vi) N.P.—710. (vii) Irrigated. (viii) Weeding. (ix) Nil. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

Cultivations : C_0=Nil. and C_1=Cultivation before sowing.

Sub-plot treatments :

Ploughings and harrowings : P_0=Control, P_1=One ploughing with mould-board plough, P_2=One ploughing with local plough, P_3=Two ploughings with local plough, and P_4=Harrowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main plot. (b) N.A. (iii) 4. (iv) (a) 51′×16′. (b) 45′×9′. (v) 3′×3½′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height of plant, no. and length of earheads, no. of spikes/earhead and grain yield. (iv) (a) 1957—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1385 lb./ac. (ii) (a) 310.2 lb./ac. (b) 135.1 lb/.ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	P_4	Mean
C_0	1378	1328	1283	1454	1308	1350
C_1	1378	1510	1494	1379	1336	1419
Mean	1378	1419	1389	1417	1322	1385

S.E. of difference of two

1. C marginal means = 98.1 lb./ac.
2. P marginal means = 67.5 lb./ac.
3. P means at the same level of C = 95.5 lb./ac.
4. C means at the same level of P =130.1 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(116).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object :—To study the effect of seed rate and spacing on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 11.11.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) —. (v) N.A. (vi) N.P.—798. (vii) and (viii) N.A. (ix) Nil. (x) 14.3.1957.

2. TREATMENTS :

Main plot treatments :

2 seed rates : R_1=75 and R_2=100 lb./ac.

Sub-plot treatments :

3 spacings between rows : S_1=9″, S_2=18″ and S_3=local method (three way sowing).

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Plot size and raw data N.A.

5. RESULTS :

(i) 1729 lb./ac. (ii)(a) and (b) N.A. (iii) Interaction R×S alone is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	1824	1556	1876	1752
R_2	1700	1500	1920	1707
Mean	1762	1528	1898	1729

S.E.'s =N.A.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 57(111).**
Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object :—To study the effect of different spacings on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 25.10.1957. (iv) (a) N.A. (b) Drilling and broadcasting. (c) N.A. (d) As per treatments. (e) N.A. (v) Broadcasting one md. of A/S before sowing and one md. of Super at sowing. (vi) N.P.—798. (vii) Irrigated. (viii) Nil. (ix) Nil. (x) 18.2.1958.

2. TREATMENTS :

4 spacings between rows : $S_1=9''$. $S_2=18''$, $S_3=3''\times3''$ (Chinese method) and S_4=Criss-cross (local method).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/120 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—1958. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1070 lb./ac. (ii) 171.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4
Av. yield	1007	1108	1183	981

S.E./mean =69.95 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(88).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object: —To study the effect of different spacings on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 3.11.1958. (iv) (a) One harrowing. (b) Hand sowing. (c) 80 lb./ac. (d) As per treatments. (e) For treatment S_3 only 1 plant/hole. (v) 30 lb./ac. of N. (vi) N.P.—798. (vii) Irrigated. (viii) One weeding. (ix) Nil. (x) 3rd week of Feb. 1959.

2. TREATMENTS :

Same as in expt. no. 57(111) on page 104.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 12′×30′. (b) 9′×27′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1082 lb./ac. (ii) 131.0 lb./ac (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4
Av. yield	956	1063	1122	1188

S.E./mean =53.51 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 58(89).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object :—To study the optimum period of sowing for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Lucerne. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) As per treatments. (iv) (a) One harrowing. (b) Dibbling. (c) 80 lb./ac. (d) 9″ between rows. (e) N.A. (v) Nil. (vi) N.P.—798. (vii) Irrigated. (viii) Three weedings. (ix) N.A. (x) N.A.

2. TREATMENTS :

Six dates of sowing : D_1=16.10.1958, D_2=23.10.1958, D_3=30.10.1958, D_4=6.11.1958, D_5=13.11.1958 and D_6=20.11.1958.

3. DESIGN

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 12′×34′. (b) 9′×30′. (v) 1.5′×2′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) and (c) —. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1358 lb./ac. (ii) 270.4 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	1106	1387	1514	1518	1202	1420

S.E./mean =135.2 lb./ac.

Crop :-Wheat. **Ref :- Gj. 59(22).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object :—To study the optimum period of sowing for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Clay loam with medium black to brown colour. (b) N.A. (iii) As per treatments. (iv) (a) One ploughing and 1 harrowing. (b) to (e) N.A. (v) 40 lb./ac. of N +40 lb./ac. of P_2O_5. (vi) N.P.—798. (vii) Irrigated. (viii) One interculturing and one weeding. (ix) 30". (x) N.A.

2. TREATMENTS :

Six dates of sowing :—D_1=16.10.1959, D_2=23.10.1959, D_3=30.10.1959, D_4=6.11.1959, D_5=13.11.1959 and D_6=20.11.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 72′×45′. (iii) 4. (iv) (a) 36′×15′. (b) 30′×12′. (v) 3′×1.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1345 lb./ac. (ii) 289.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	1025	956	1416	1531	1763	1381

S.E./mean =144.7 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(114).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object :—To compare different methods of Wheat cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 24.11.1956. (iv) (a) N.A. (b) As per treatments. (c) 100 lb./ac. (d) and (e) N.A. (v) 5 C.L./ac. of F.Y.M.+30 lb./ac. of N+36 lb./ac. af P_2O_5. (vi) N.P.—798. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 14.3.1957.

2. TREATMENTS :

1. Chinese method : dibbling one seed/hill at 2.5"×2.5" spacing.
2. Close spacing method : hand sowing in rows 2.5" apart without plant spacing.
3. Local method : three way sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Raw data N.A.

5. RESULTS :

(i) 2942 lb./ac. (ii) N.A. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield ...	3552	2800	2473

S.E./mean =N.A.

Crop :- Wheat. **Ref :- Gj. 56(48).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To study the optimum time of sowing for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann hemp as G.M. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) As per treatments. (iv) (a) One ploughing and two harrowings. (b) Drilling. (c) 60 lb./ac. (d) Between rows—12″; between plants—irregular. (e) N.A. (v) 125 lb./ac. of A/S in three doses at first irrigation, at tillering and at flag leaf stage. (vi) K—28 (medium). (vii) Irrigated. (viii) Three weedings and 3 interculturings. (ix) Nil. (x) N.A.

2. TREATMENTS :

Six dates of sowing : D_1=20.10.1956, D_2=30.10.1956, D_3=9.11.1956, D_4=19.11.1956, D_5=29.11.1956 and D_6=9.12.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6 (iv) (a) 32′×11′. (b) 26′×5′. (v) 3′ around the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Number of tillers, height, no. of spikelets, earing dates and grain yield. (iv) (a) 1956—contd. (b) and (c) No (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1091 lb./ac. (ii) 227.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	889	1453	1456	1381	741	626

S.E./mean =92.81 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(47).**

Site :- Central Exptl. Stn., Junagadh. **Type :- 'C'.**

Object :—To study the optimum spacing and seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp as G.M. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 3.10.1956. (iv) (a) Two ploughings and 2 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Top dressing with 125 lb./ac. of A/S in three doses at 1st irrigation, tillering and at flag leaf stage. (vi) K—28 (medium). (vii) Irrigated. (viii) Two weedings and 4 intercultures. (ix) Nil. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+T (extra treatment)

(1) 3 spacings between rows : R_1=9″, R_2=12″ and R_3=18″.
(2) 3 seed rates : S_1=40, S_2=60 and S_3=80 lb./ac.
T : broadcasting of 80 lb./ac. of seed ; spacing between plants is irregular.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 30′×13′. (b) 24′×6′. (v) 3′×3½′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. No lodging. (ii) Slight attack of rust. (iii) Height, stand count, spikelets, earing dates and grain yield. (iv) (a) 1956—contd. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1441 lb./ac. (ii) 136.4 lb./ac. (iii) Interaction R×S alone is significant. (iv) Av. yield of grain in lb./ac.

T=1456 lb./ac.

	R_1	R_2	R_3	Mean
S_1	1629	1569	1398	1532
S_2	1428	1475	1362	1422
S_3	1279	1282	1533	1365
Mean	1445	1442	1431	1439

S.E. of any marginal mean =45.46 lb./ac.
S.E. of T *vs* any other mean =90.82 lb./ac.
S.E. of body of table or T mean =78.73 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(56).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To study the optimum spacing and seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp as G.M. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 13 and 14.11.1957. (iv) (a) One ploughing and two harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Ammo. Phos. at 1¼ lb./plot before sowing in furrows and 1 lb./plot at tillering. (vi) S-56 (medium). (vii) Irrigated. (viii) Two weedings and one interculturing. (ix) Nil. (x) 1.3.1958.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 spacings between rows : R_1=9", R_2=12", R_3=18" and R_4=broadcasting,

(2) 3 seed rates : S_1=40, S_2=60 and S_3=80 lb./ac.

Spacing between plants is irregular.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 30'×12'. (b) 24'×6'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. No lodging. (ii) Slight attack of rust. (iii) Earing dates, height, no. of spikelets and grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1775 lb./ac. (ii) 177.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	1746	1795	1738	1584	1716
S_2	1875	1888	1856	1725	1836
S_3	1712	1739	1850	1791	1773
Mean	1778	1807	1815	1700	1775

S.E. of R marginal mean =51.31 lb./ac.
S.E. of S marginal mean =44.44 lb./ac.
S.E. of body of table =88.88 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 58(123).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To study the optimum spacing and seed rate for Wheat.

1. BASAL CONDITIONS:

(i) (a) to (c) Nil. (ii) (a) Medium Black. (b) Refer soil analysis, Junagadh. (iii) 4.12.1958. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) —. (v) N at 40 lb./ac. and P_2O_5 at 40 lb./ac. at sowing. (vi) S-56. (viii) Irrigated. (viii) One hoeing. (ix) Nil. (x) 6.4.1959.

2. TREATMENTS:

Same as in expt. no. 57(56) on page 108.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 30′×12′. (b) 24′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1761 lb./ac. (ii) 269.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	R_1	Mean
S_1	1597	1704	1692	1531	1631
S_2	1862	1765	1962	1521	1777
S_3	1758	1891	1926	1919	1874
Mean	1739	1787	1860	1657	1761

S.E. of R marginal means = 77.80 lb./ac.
S.E. of S marginal means = 67.38 lb./ac.
S.E. of body of table =134.75 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(118).**

Site :- Agri. Res. Stn., Nakhatrana. **Type :- 'C'.**

Object :—To find out a suitable method of sowing for Wheat.

1. BASAL CONDITIONS :

(i) (a) Groundnut—Wheat. (b) Groundnut. (c) Nil. (ii) (a) Sandy soil. (b) N.A. (iii) 22.11.1958. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) As per treatment. (e)—. (v) 5 C.L./ac. of F.Y.M. (vi) N.P.—718. (vii) Irrigated. (viii) N.A. (ix) 12″. (x) 11.3.1959.

2. TREATMENTS :

1. Line sowing at 9″ distance between rows.
2. Line sowing at 18″ distance between rows.
3. Broadcasting.

3. DESIGN

(i) R.B.D. (ii) (a) 3. (b) 45′×40′. (iii) 5. (iv) (a) 15′×40′. (b) 12′×36′. (v) 1.5′×2′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b)—. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 414 lb./ac. (ii) 62.71 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	467	309	467

S.E./mean =28.03 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(112).**

Site :- Agri. Res. Stn., Porbandar. **Type :- 'C'.**

Object :—To study the effect of different spacings on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra* (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 25.11.1956. (iv) (a) N.A. (b) Drilling. (c) 100 lb./ac. (d) As per treatments. (e)—. (v) Nil. (vi) Kenphad. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 20.3.1957.

2. TREATMENTS :

(1) 18″ spacing between rows.
(2) 36″ spacing between rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) and (b) 45′×12′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 648 lb./ac. (ii) 34.14 lb./ac. (iii) Treatment difference is highly significant. (vi) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	758	538

S.E./mean =9.85 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(103).**

Site :- Irrigation Demonstration Farm, Umrala. **Type :- 'C'.**

Object :—To find out the optimum time of sowing for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 20 lb./ac. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) 90 lb./ac. (d) 9″ between rows. (e)—. (v) 30 lb./ac. of N as manure mixture. (vi) Kenphad—28. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 14.3.1957.

2. TREATMENTS :

5 dates of sowing : D_1=17.10.1956, D_2=24.10.1956, D_3=31.10.1956, D_4=7.11.1956 and D_5=14.11.1956.

3. DESIGN :

(i) 5×5 L.Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 21′×15′. (v) 1.5′ alround the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 968 lb./ac. (ii) 85.24 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	671	857	927	1148	1238

S.E./mean =38.05 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(76).**

Site :- Irrigation Demonstration Farm, Umrala. **Type :- 'C'.**

Object :—To find out the optimum time for sowing Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp as G.M. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) One ploughing and 3 harrowings. (b) to (e) N.A. (v) 30 lb./ac. of N as A/S +18 lb./ac. of P_2O_5 as super. (vi) Kenphad—28 (medium). (vii) Irrigated. (viii) One weeding. (ix) Nil. (x) 8.3.1958.

2. TREATMENTS :

5 dates of sowing : D_1=15.10.1957, D_2=22.10.1957, D_3=29.10.1957, D_4=6.11.1957 and D_5=13.11.1957.

3. DESIGN :

(i) 5×5 L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 21′×15′. (v) 1½′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height of plants and grain yield. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1130 lb./ac. (ii) 122.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	746	1047	1083	1230	1542

S.E./mean =54.93 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(92).**

Site :- Irrigation Demonstration Farm, Umrala. **Type :- 'C'.**

Object :—To ascertain the optimum time for sowing Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) One ploughing. (b) Drilling. (c) 90 lb./ac. (d) 9″ between rows. (e) —. (v) Nil. (vi) N.P.—718. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) For treatments D_1 and D_2—27.2.1957, for D_3 and D_4—30.2.1959, for D_5—14.3.1959 and for D_6—24.3.1959.

2. TREATMENTS :

6 dates of sowing : D_1=23.10.1958, D_2=30.10.1958, D_3=6.11.1958, D_4=13.11.1958, D_5=20.11.1958 and D_6=27.11.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 21′×15′. (v) 1.5′ around the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1652 lb./ac. (ii) 102.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	1548	1818	1784	1618	1634	1507

S.E./mean =45.96 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(35).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CV'.**

Object :—To find out suitable seed rate for different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann as G.M. (c) 200 lb./ac. of Super. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 8.11.1957. (iv) (a) Ploughing, harrowing and cultivation by drill. (b) to (e) N.A. (v) 200 lb./ac. of super before soaking dose, 200 lb./ac. of A/S, 200 lb./ac. of manure mixture and 100 lb./ac. of castor cake broadcast before sowing. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) Nil. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=N.P—710 and V_2=Kenphad.

Sub-plot treatments :

3 seed rates : $R_1=60$, $R_2=80$ and $R_3=100$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) 3 rows on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plant, no. of earheads, length of earheads, no. of spikes/earhead. Grain and fodder yield. (iv) (a) 1957—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1817 lb./ac. (ii) (a) 132.7 lb./ac. (b) 143.3 lb./ac. (iii) Main effect of V is significant. Effect of R and interaction V×R are not significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	Mean
V_1	1884	1884	1872	1880
V_2	1746	1793	1724	1754
Mean	1815	1839	1798	1817

S.E. of difference of two

1. V marginal means =44.23 lb./ac.
2. R marginal means =58.50 lb./ac.
3. R means at the same level of V =82.73 lb./ac.
4. V means at the same level of R =80.74 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(118).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To find out an improved method of cultivation for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 15.11.1957. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) 12″ between rows. (e) —. (v) Nil. (vi) Kenphad. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.3.1958.

2. TREATMENTS :

2 methods of cultivation : M_1=improved—sann G.M. at 60 lb./ac. ; seed rate at 40 lb./ac. ; 40 lb./ac. of N as A/S applied on 8.12.1957 and 30.12.1957 and M_2=local—sann G.M. at 60 lb./ac. ; seed rate at 80 lb./ac. and no top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 40′×36′. (b) 36′×30′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 885 lb./ac. (ii) 167.4 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_1	M_2
Av. yield	1223	548

S.E./mean =83.70 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(109).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To find out an improved method of cultivation for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 1.7 C.L./ac. of F.Y.M.+63 lb./ac. of A/S. (ii) (a) Black. (b) Refer soil analysis, Dabhoi. (iii) 15.11.1958. (iv) (a) Nil. (b) Drilling. (c) As per treatments. (d) 12″ between rows. (e) —. (v) Nil. (vi) Kenphad. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 4.4.1959.

2. TREATMENTS :

2 methods of cultivation : M_1=improved—sann G.M. at 60 lb./ac. ; 40 lb./ac. of N as A/S applied in two doses ; seed rate at 40 lb./ac. and M_2=local—sann G.M. at 60 lb./ac. ; seedrate at 80 lb./ac. and no top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 40′×36′. (b) 36′×30′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Abnormal season. (vii) Nil.

5. RESULTS :

(i) 368 lb./ac. (ii) 96.79 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	M_1	M_2
Av. yield	455	281

S.E./mean =48.39 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(115).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To find out an improved method of cultivation for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 8 C.L./ac. of F.Y.M. (ii) (a) Black. (b) Refer soil analysis, Dabhoi. (iii) 22.12.1959. (iv) (a) 2 ploughings and one harrowing. (b) Drilling. (c) As per treatments. (d) 12″ between rows. (e) —. (v) Nil. (vi) Kenphad. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 20.4.1960.

2. TREATMENTS :

2 methods of cultivation : M_1=improved—40 lb./ac. of N as A/S ; seed rate at 40 lb./ac. and M_2=local—10 C.L./ac. of F.Y.M ; seed rate at 80 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 40′×36′. (b) 36′×30′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 469 lb./ac. (ii) 47.95 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M_1	M_2
Av. yield	572	366

S.E./mean =23.97 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(131).**

Site :- Agri. Res. Stn., Kholwad. **Type :- 'CM'.**

Object :—To find out the effect of differently treated *Kharif* crops on succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 24.11.1959. (iv) (a) 2 ploughings, 2 harrowings. (b) Drilling. (c) 40 lb./ac. (d) 12″ between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) N.P.—718. (vii) Irrigated. (viii) 3 interculturings, 2 weedings. (ix) Nil. (x) N.A.

2. TREATMENTS :

1. Paddy *sathi* in *Kharif* followed by wheat in *Rabi.*
2. Groundnut in *Kharif* followed by wheat in *Rabi.*
3. Groundnut with 20 lb./ac. of P_2O_5 in *Kharif* followed by wheat in *Rabi.*
4. *Chinamug* in *Kharif* followed by wheat in *Rabi.*
5. *Chinamug* with 20 lb./ac. of P_2O_5 in *Kharif* followed by wheat in *Rabi.*
6. Sann G.M. in *Kharif* followed by wheat in *Rabi.*
7. Sann with 20 lb./ac. of P_2O_5 in *Kharif* followed by wheat in *Rabi.*
8. Fallow in *Kharif* followed by wheat in *Rabi.*
9. Fallow in *Kharif* followed by wheat (unmanured) in *Rabi.*
10. Ploughed fallow in *Kharif* followed by wheat.

Paddy and wheat received 40 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super except in treatment 9.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 60′×24′. (b) 54′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 649 lb./ac. (ii) 78.65 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8	9	10
Av. yield	457	618	787	636	774	639	741	665	445	733

S.E./mean =39.32 lb./ac.

Crop :- Wheat. **Ref :- Gj. 56(101).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To find out suitable method of sowing and dose of N for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar.* (c) 20 lb./ac. of N as A/S. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 28.11.1956. (iv) (a) One ploughing, one harrowing. (b) As per treatments. (c) 90 lb./ac. (d) As per treatments. (e) —. (v) Nil. (vi) Kenphad—28. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 27.3.1957.

2. TREATMENTS :

Main-plot treatments :

4 methods of sowing : S_1=broadcasting seed, S_2=two-way sowing, S_3=drilling seed 9″ apart and S_4=drilling seed 18″ apart.

Sub-plot treatments :

3 levels of N : N_0=0, N_1=20 and N_2=40 lb./ac. of N.

N applied at the time of sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 3 subs-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30′×12′. (b) 24′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 953 lb./ac. (ii) (a) 201.2 lb./ac. (b) 171.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean
S_1	854	1059	843	919
S_2	957	877	882	905
S_3	851	944	1072	956
S_4	1019	979	1095	1031
Mean	920	965	973	953

S.E. of difference of two

1. S marginal means = 82.1 lb./ac.
2. N marginal means = 60.6 lb./ac.
3. N means at the same level of S =121.2 lb./ac.
4. S means at the same level of N =129.6 lb./ac.

Crop :- Wheat. **Ref :- Gj. 57(112).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To find out suitable dose of N and method of sowing for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 31.10.1957. (iv) (a) One ploughing. (b) As per treatment. (c) N.A. (d) As per treatments. (e) N.A. (v) Sann G.M. at the rate of 2000 lb./ac. buried in *kharif* season. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56 (101) on page 115.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12′× 30′. (b) 6′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1452 lb./ac. (ii) (a) 243.7 lb./ac. (b) 169.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean
S_1	1436	1463	1522	1474
S_2	1450	1494	1708	1551
S_3	1478	1379	1326	1398
S_4	1408	1380	1376	1388
Mean	1443	1429	1483	1452

S.E. of difference of two

1. S marginal means = 99.5 lb./ac.
2. N marginal means = 59.8 lb./ac.
3. N means at a level of S =119.6 lb./ac.
4. S means at a level of N =139.4 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 56(MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'CM'.**

Object :—Type VIII—To determine the optimum seedrate and date of sowing for Wheat when different doses of N and P_2O_5 are applied.

1. BASAL CONDITIONS:

(i) Cotton—*Jowar*—Wheat. (b), (c) N.A. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) As per treatments. (iv) (a) 1 ploughings, 2 harrowings with *bakhar.* (b) N.A. (c) As per treatments. (d) Rows 9″ apart. (e) N.A. (v) Sannhemp buried as G.M. (vi) Irrigated. (vii) N.A. (viii) N.A. (ix) 12 to 28.3.1957.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 seedrates : $R_1=50$, $R_2=70$ and $R_3=90$ lb./ac.

(2) 3 sowing dates : $D_1=28.10.2956$, $D_2=12.11.1956$ and $D_3=27.11.1956$.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.

Nitrogenous fertilizers broadcast at the time of sowing and phosphatic fertilizers placed in furrows.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 30′×12′. (b) 24′×6′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—1958. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1728 lb./ac. (ii) (a) 948.9 lb./ac. (b) 285.8 lb./ac. (iii) P effect and interaction NRD are highly significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	N_0	N_1	N_2	P_0	P_1	P_2	Mean
D_1	1776	1712	1463	1687	1665	1600	1520	1680	1752	1651
D_2	1928	1708	1544	1599	1817	1765	1498	1775	1907	1727
D_3	1966	1689	1760	1760	1840	1815	1681	1832	1903	1805
Mean	1890	1703	1589	1682	1774	1727	1566	1762	1854	1728
P_0	1677	1588	1433	1619	1598	1481				
P_1	1899	1752	1636	1693	1833	1760				
P_2	2094	1769	1699	1734	1891	1938				
N_0	1829	1661	1557							
N_1	1954	1800	1568							
N_2	1888	1648	1643							

S.E. of difference of two

1. D or R marginal means	=182.6 lb./ac.
2. N or P marginal means	= 55.0 lb./ac.
3. N or P means at the same level of D or R	= 95.3 lb./ac.
4. D or R means at the same level of N or P	=198.5 lb./ac.
5. means in the body of D×R table	=316.3 lb./ac.
6. means in the body of N×P table	= 95.3 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 57(MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'CM'.**

Object :—Type VIII—To determine the optimum seedrate and date of sowing for Wheat when different doses of N and P_2O_5 are applied.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Wheat. (b) and (c) N.A. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) As per treatments. (iv) (a) 2 ploughings, 2 harrowings. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Sannhemp sown for G.M. and applied at the rate of 13,000 lb./ac. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 2nd week of March 1958.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 seedrates : R_1=50, R_2=70 and R_3=90 lb./ac.

(2) 3 sowing dates : D_1=28.10.1957, D_2=12.11.1957 and D_3=27.11.1957.

Sub-plot treatments :

Same as in expt. no. 56(MAE) on page 116.

3: DESIGN and 4. GENERAL :

Same as in expt. no. 56(MAE) on page 116.

5. RESULTS :

(i) 1466 lb./ac. (ii) (a) 546.3 lb./ac. (b) 265.9 lb./ac. (iii) P effect and interaction D×P are highly significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	N_0	N_1	N_2	P_0	P_1	P_2	Mean
D_1	1330	1274	1357	1344	1354	1262	1055	1441	1464	1320
D_2	1443	1694	1638	1549	1588	1639	1070	1762	1943	1592
D_3	1310	1490	1656	1474	1461	1522	1198	1517	1740	1485
Mean	1361	1486	1551	1456	1468	1474	1108	1574	1716	1466
P_0	1039	1098	1188	1117	1124	1083				
P_1	1392	1666	1663	1547	1512	1662				
P_2	1652	1694	1801	1702	1767	1678				
N_0	1314	1429	1624							
N_1	1396	1511	1496							
N_2	1373	1518	1532							

S.E. of the difference of two

1. D or R marginal means =105.1 lb./ac.
2. N or P marginal means = 51.2 lb./ac.
3. N or P means at the same level of D or R = 88.6 lb./ac.
4. D or R means at the same level of N or P =127.6 lb./ac.
5. Means in the body of D×R table =182.1 lb./ac.
6. Means in the body of N×P table = 88.6 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 58 (MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'CM'.**

Object :—Type VIII—To determine the optimum seedrate and date of sowing for Wheat when different doses of N and P_2O_5 are applied.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Wheat. (b) and (c) N.A. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) As per treatments. (iv) (a) 2 ploughings and 2 harrowings. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March 1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 seedrates : R_1=50, R_2=70 and R_3=90 lb./ac.

(2) 3 sowing dates : D_1=31.10.1958, D_2=14.11.1958 and D_3=27.11.1958.

Sub-plot treatments :

Same as in expt. no. 56 (MAE) on page 116 on wheat crop.

3. DESIGN to 4. GENERAL :

Same as in expt. no. 56(MAE) on page 116.

5. RESULTS :

(i) 1834 lb./ac. (ii) (a) 496.3 lb./ac. (b) 314.7 lb./ac. (iii) P effect is highly significant. D and N effects and interaction N×P are significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	N_0	N_1	N_3	P_0	P_1	P_2	Mean
D_0	1563	1479	1785	1518	1632	1676	1459	1567	1800	1609
D_1	1880	1962	2083	1845	2005	2075	1631	2067	2227	1975
D_2	1856	1945	1956	1864	2005	1888	1664	1987	2106	1919
Mean	1766	1795	1941	1742	1881	1880	1585	1874	2044	1834
P_0	1521	1602	1632	1369	1762	1623				
P_1	1784	1806	2031	1859	1798	1964				
P_2	1995	1976	2162	1998	2082	2052				
N_0	1728	1636	1863							
N_1	1823	1846	1972							
N_2	1747	1903	1989							

S.E. of the difference of two

1. D or R marginal means = 95.5 lb./ac.
2. N or P marginal means = 60.6 lb./ac.
3. N or P means at the same level of D or R =104.9 lb./ac.
4. D or R means at the same level of N or P =128.3 lb./ac.
5. means in the body of D×R table =165.4 lb./ac.
6. means in the body of N×P table =104.9 lb./ac.

Crop :- Wheat ***(Rabi).***

Site :- Agri. Res. Stn., Amreli.

Ref :- Gj. 59 (94).

Type :- 'CMV'.

Object :—To determine the optimum spacing, seed rate and manurial dose for different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 4.11.1959. (iv) (a) One ploughing and 2 horrowings. (b) Drilling. (c) and (d) As per treatments. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Three interculturings and 2 weedings. (ix) 12.99". (x) 4.4.1960.

2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

(1) 2 varieties of wheat : A_0=KCN—133 and A_1=N.P.—710.
(2) 2 spacings between rows : B_0=9" and B_1=criss-cross drilling.
(3) 2 seed rates : C_0=60 and C_1=100 lb./ac.
(4) 2 doses of F.Y.M. : D_0=0 and D_1=10,000 lb./ac.
(5) 2 levels of N as A/S : E_0=0 and E_1=40 lb./ac.
(6) 2 levels of P_2O_5 as Super : F_0=0 and F_1=40 lb./ac.

Time and method of application of manures—N.A.

3. DESIGN :

(i) 2^6 Fact. confd. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) One. (iv) (a) 36'×21'. (b) 30'×15'. (v) 3' alround the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1398 lb./ac. (ii) 207.3 lb./ac. (iii) Effect of F and interaction E×F are highly significant. Effect of D and E are significant. Others are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	A		B		C		D		E		F	
		−	+	−	+	−	+	−	+	−	+	−	+
A	−128.53	—	—	−57.17	−199.89	−124.33	−132.73	−90.39	−166.67	−170.85	−86.21	−136.36	−120.70
B	12.37	83.73	−58.99	—	—	109.20	−84.46	26.25	−1.51	109.14	−84.40	−11.25	35.99
C	29.31	33.51	25.11	126.14	−67.52	—	—	5.08	53.54	33.51	25.11	−18.51	77.13
D	141.30	179.44	103.16	155.18	127.42	117.07	165.53	—	—	193.36	89.24	203.13	79.47
E	132.83	90.51	175.15	229.60	36.06	137.03	128.63	184.89	80.77	—	—	−14.15	279.81
F	304.65	296.82	312.48	281.03	328.27	256.83	352.47	366.48	242.82	157.67	451.63	—	—

S.E. of mean response	=51.8 lb./ac.
S.E. of differential response	=73.3 lb./ac.

Crop :- Wheat *(Rabi).* **Ref :- Gj. 58(85).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CMV'.**

Object :—To study the effect of different seed rates and fertilizers on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 16.11.1958. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) 9". (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 8 weedings. (ix) 13.10". (x) 5, 9 and 18.3.1959 and 2, 8.4.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2), (3) and (4)

(1) 3 varieties : V_0=N.P.—710; V_1=N.P.—718 and V_2=Kenphad.
(2) 3 seed rates : $S_0=40$, $S_1=60$ and $S_2=80$ lb./ac.
(3) 3 doses of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(4) 3 doses of P_2O_5 : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.

Sub-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

3. DESIGN :

(i) $3^4 \times 2$ Split-plot confd. (ii) (a) 9 blocks/replication ; 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 33′×18′. (b) 30′×15′. (v) 1.5′ alround the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Light attack of rust. (iii) Grain yield. (iv) (a) 1958—contd. (b) and (c) —. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 760 lb./ac. (ii) (a) 191.5 lb./ac. (b) 111.0 lb./ac. (iii) Main effects of V, N and P are highly significant. Others are not significant. (iv) Av. yield of grain in lb./ac.

	V_0	V_1	V_2	S_0	S_1	S_2	N_0	N_1	N_2	Mean	P_0	P_1	P_2
F_0	683	778	794	707	752	796	495	749	1011	752	642	767	847
F_1	672	818	816	756	768	782	457	775	1074	769	662	765	879
Mean	677	798	805	732	760	789	476	762	1043	760	652	766	863
P_0	549	665	742	600	632	724	365	684	906				
P_1	694	774	830	770	793	735	484	772	1042				
P_2	789	956	843	826	854	909	579	830	1180				
N_0	407	505	515	421	505	502							
N_1	682	813	790	767	739	781							
N_2	942	1077	1109	1008	1036	1084							
S_0	696	742	758										
S_1	675	780	824										
S_2	661	873	833										

S.E. of difference of two

1. V, S, N or P marginal means	= 36.9 lb./ac.
2. F marginal means	= 17.4 lb./ac.
3. F means at a level of V,S,N or P	= 30.2 lb./ac.
4. V,S,N or P means at a level of F	=42.59 lb./ac.
S.E. of body of any table not involving F	=45.14 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 59(79).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CMV'.**

Object :—To study the effect of different seed rates and fertilizers on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) Legume—Cereal—Cotton. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 21, 22, 23.11.1959. (iv) (a) Three ploughings and 2 harrowings. (b) Drilling. (c) As per treatments. (d) 9". (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings. (ix) Nil. (x) 26.3.1960.

2. TREATMENTS :

Same as in expt. no. 58 (85) on page 120.

3. DESIGN :

(i) $3^4 \times 2$ split-plot confd. (ii) (a) 9 blocks/replication; 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 34′×20′. (b) 30′×15′. (v) 2′×2.5′. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Slight attack of grass-hoppers and stem-borers. (iii) Grain and fodder yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 868 lb./ac. (ii) (a) 234.1 lb./ac. (b) 145.6 lb./ac. (iii) Main effect of N and P, interaction N ×P are significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	V_0	V_1	V_2	S_0	S_1	S_2	N_0	N_1	N_2	Mean	P_0	P_1	P_2
F_0	877	849	844	839	845	886	654	887	1029	857	775	823	972
F_1	842	884	913	878	887	874	636	908	1096	880	796	867	976
Mean	859	866	878	795	866	880	645	897	1062	868	785	845	974
P_0	748	806	801	813	728	815	670	793	892				
P_1	829	837	869	822	863	850	561	933	1040				
P_2	1001	957	964	940	1007	974	705	961	1256				
N_0	666	629	643	623	619	696							
N_1	900	866	921	887	881	919							
N_2	1012	1105	1072	1065	1098	1025							
S_0	828	861	886										
S_1	858	884	856										
S_2	892	854	893										

S.E. of difference of two

1. V, S, N or P marginal means	=45.1 lb./ac.
2. F marginal means	=22.9 lb./ac.
3. F means at a level of V, S, N or P	=39.6 lb./ac.
3. V, S, N or P means at a level of F	=53.1 lb./ac.
S.E. of body of any table not involving F	=55.18 lb /ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 59(12).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CMV'.**

Object :—To determine the optimum spacing, seed rate and manurial dose for different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 26.11.1959. (iv) (a) 3 ploughings and 2 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Three weedings. (ix) Nil. (x) 1.4.1960.

2. TREATMENTS :

Same as in expt. no. 59(94) on page 119.

3. DESIGN :

(i) 2^5 confd. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 36′×15′. (b) 30′×12′ (v) 3′×1.5′. (vi) Yes.

4. GENERAL :

(i) Very good. Slight lodging due to high winds and rains. (iii) Slight attack of grass-hoppers and stem-borers. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) Junagadh and Jamnagar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1637 lb./ac. (ii) 227.0 lb./ac. (iii) Main effect of F and interaction A×C are significant. Other eff[illegible] are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	A		B		C		D		E		F	
		−	+	−	+	−	+	−	+	−	+	−	+
A	91.65	—	—	141.10	42.20	250.08	−66.78	54.82	128.48	78.72	104.58	107.75	75.55
B	−24.95	24.50	−74.40	—	—	−116.60	66.70	−81.97	32.07	−26.61	−23.29	−120.99	71.09
C	68.44	226.87	−89.99	−23.21	160.09	—	—	6.35	130.53	89.08	47.80	155.03	−18.15
D	129.54	92.71	166.37	72.52	186.56	67.45	191.63	—	—	32.36	226.72	47.34	211.74
E	101.71	88.78	114.64	100.05	103.37	122.35	81.07	4.53	198.89	—	—	138.39	65.03
F	101.26	117.36	85.16	5.22	197.30	187.85	14.67	19.06	183.46	137.94	64.58	—	—

S.E. of mean response =56.75 lb./ac.
S.E. of differential response =80.26 lb./ac.

Crop :- Wheat ***(Rabi).*** **Ref :- Gj. 58(117).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'CMV'.**

Object :—To study the effect of different seed rates and fertilizers on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and)c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 19.11.1958. (iv) (a) N.A. (b) Hand sowing. (c) As per treatments. (d) 9″ between rows. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Two weedings. (ix) 28.42″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 58(85) on page 120.

3. DESIGN :

(i) $3^4 \times 2$ split-plot. (ii) (a) 9 blocks/replication ; 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 1 (iv) (a) 15′×30′. (b) 12′×27′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iii) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 884 lb./ac. (ii) (a) 140.8 lb./ac. (b) 121.2 lb./ac. (iii) Effect of N, P, F and interaction P×S and V×S are highly significant. Interaction P×F is significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	V_0	V_1	V_2	S_0	S_1	S_2	N_0	N_1	N_2	Mean	P_0	P_1	P_2
F_0	854	831	843	843	829	855	688	838	1002	843	696	887	944
F_1	913	959	905	904	916	958	771	923	1084	926	822	899	1057
Mean	883	895	874	874	872	906	729	880	1043	884	759	893	1001
P_0	787	760	729	752	722	803	641	765	870				
P_1	896	930	853	921	931	826	733	908	1037				
P_2	967	994	1042	949	964	1090	814	968	1221				
N_0	736	737	715	688	721	779							
N_1	829	888	924	895	830	916							
N_2	1085	1059	984	1038	1065	1025							
S_0	900	936	786										
S_1	904	845	867										
S_2	846	903	970										

S.E. of difference of two

1. V, S, N or P marginal means	=27.1 lb./ac.
2. F marginal means	=19.0 lb./ac.
3. F means at a level of V, S, N or P	=33.0 lb./ac.
4. V, S, N or P means at a level of F	=35.8 lb./ac.
S.E. of body of any table not involving F	=62.78 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 59(25).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'CMV'.**

Object :—To study the effect of different seed rates and fertilizers on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Clayey loam to medium black. (b) N.A. (iii) 16.11.1959. (iv) (a) One ploughing and 1 harrowing. (b) Drilling. (c) As per treatments. (d) N.A. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) One weeding and 2 interculturings. (ix) 30". (x) 12.3.1960.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

(1) 3 varieties : V_0=N.P.—710, V_1=N.P.—718 and V_2=Kenphad—28.
(2) 3 seed rates : $S_0=40$, $S_1=60$ and $S_2=80$ lb./ac.
(3) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(4) 3 levels of P_2O_5 : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
(5) 2 levels of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

3. DESIGN :

(i) $3^4\times2$ confd. (ii) (a) 9 blocks/replication ; 18 plots/block. (b) N.A. (iii) 1. (iv) (a) 30′×15′. (b) 24′×9′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) Halvad and Junagadh. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1327 lb./ac. (ii) 175.5 lb./ac. (iii) Interactions N×P, N×V and V×S are significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	V_0	V_1	V_2	S_0	S_1	S_2	N_0	N_1	N_2	Mean	P_0	P_1	P_2
F_0	1210	1352	1205	1230	1274	1262	735	1377	1654	1255	1004	1319	1443
F_1	1376	1502	1317	1372	1476	1347	865	1487	1843	1398	1213	1450	1532
Mean	1293	1427	1261	1301	1375	1305	800	1432	1748	1327	1108	1384	1488
P_0	1051	1219	1054	1116	1125	1083	789	1147	1387				
P_1	1348	1467	1338	1375	1403	1376	824	1492	1837				
P_2	1479	1593	1390	1411	1597	1455	786	1657	2020				
N_0	796	830	773	776	894	728							
N_1	1434	1527	1336	1387	1436	1474							
N_2	1648	1923	1673	1740	1794	1710							
S_0	1171	1461	1270										
S_1	1243	1464	1417										
S_2	1464	1354	1095										

S.E. of N, P, V or S marginal means =23.88 lb./ac.
S.E. of F marginal mean =19.49 lb./ac.
S.E. of body of N×P, N×V, N×S, P×V, P×S or S×V tables =41.33 lb./ac.
S.E. of body of N×F or P×F, S×F or V×F tables =33.77 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 58 (121).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'CMV',**

Object :—To study the effect of different seed rates and fertilizers on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) and (b) N.A. (c) As per treatments. (d) N.A. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 58(85) on page 120.

3. DESIGN :

(i) $3^4 \times 2$ split-plot confd. (ii) (a) 9 blocks/replication ; 9 main-plots/block ; 2 sub-plots/main-plot. (b) 99′×108′. (iii) 1. (iv) (a) 33′×18′. (b) 30′×15′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1526 lb./ac. (ii) (a) 275.1 lb./ac. (b) 181.6 lb./ac. (iii) P and F effects are highly significant. N effect is significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	V_0	V_1	V_2	S_0	S_1	S_2	N_0	N_1	N_2	Mean	P_0	P_1	P_2
F_0	1474	1525	1395	1411	1475	1507	1366	1518	1510	1465	1398	1377	1618
F_1	1610	1598	1555	1534	1653	1576	1499	1598	1667	1588	1494	1536	1733
Mean	1542	1562	1475	1473	1564	1542	1432	1558	1588	1526	1446	1456	1676
P_0	1387	1516	1436	1440	1457	1443	1328	1475	1536				
P_1	1552	1464	1353	1384	1506	1479	1366	1514	1489				
P_2	1686	1706	1636	1594	1730	1704	1603	1685	1739				
N_0	1456	1452	1389	1353	1526	1418							
N_1	1566	1614	1493	1486	1619	1568							
N_2	1603	1618	1543	1579	1547	1639							
S_0	1474	1499	1445										
S_1	1582	1631	1479										
S_2	1569	1555	1501										

S.E. of difference of two
1. V, S, N or P marginal means =52.9 lb./ac.
2. F marginal means =28.5 lb./ac.
3. F means at the same level of V, S N or P =49.4 lb./ac.
4. V, S, N or P means at the same level of F =63.4 lb./ac.
S.E. of body of any table not involving F =64.84 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 59(136).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'CMV'.**

Object :—To study the effect of different seed rates and fertilizers on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 24 to 29.11.1959. (iv) (a) One ploughing and 1 harrowing. (b) Hand sowing. (c) As per treatments. (d) N.A. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Two interculturings and 2 weedings. (ix) Nil. (x) 14 to 19.4.1960.

2. TREATMENTS :

Same as in expt. no. 58(85) on page 120.

3. DESIGN :

(i) $3^4 \times 2$ split-plot. (ii) (a) 9 blocks/replication ; 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 18′×33′. (b) 15′×30′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1033 lb./ac. (ii) (a) 334.9 lb./ac. (b) 129.1 lb./ac. (iii) V effect is highly significant. F effect is significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	V_0	V_1	V_2	S_0	S_1	S_2	N_0	N_1	N_2	Mean	P_0	P_1	P_2
F_0	1291	595	1136	940	1029	1054	1048	1026	948	1007	920	1033	1070
F_1	1321	670	1184	964	1096	1115	1065	1105	1005	1058	992	1064	1120
Mean	1306	632	1160	952	1062	1085	1056	1066	976	1033	921	1048	1095
P_0	1266	508	1093	846	952	1069	982	1042	843				
P_1	1267	718	1159	971	1148	1025	1090	1059	995				
P_2	1385	671	1229	1039	1087	1159	1098	1096	1091				
N_0	1316	714	1140	875	1206	1089							
N_1	1383	634	1180	1020	1090	1087							
N_2	1220	549	1160	961	891	1078							
S_0	1302	421	1134										
S_1	1305	710	1172										
S_2	1312	767	1175										

S.E. of difference of two

1. V, S, N or P marginal means	=64.5 lb./ac.
2. F marginal means	=20.3 lb./ac.
3. F means at the same level of V, S, N or P	=35.1 lb./ac.
4. V, S, N or P means at the same level of F	=69.1 lb./ac.
S.E. of body of any table not involving F	=78.9 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 59(100).**
Site :-Agri. Res. Stn., Umrala. **Type :- 'CMV'**

Object :—To study the effect of different seed rates and fertilizers on different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 8, 9.11.1959. (iv) (a) One ploughing and 1 harrowing. (b) Drilling. (c) As per treatments. (d) 9″ between rows. (e) —. (v) Sann green manuring (amount N.A.). (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) 25.98″. (x) 20,22.3.1960.

2. TREATMENTS :

Same as in expt. no. 58(85) on page 120.

3. DESIGN :

(i) $3^4 \times 2$ split-plot. (ii) (a) 9 blocks/replication ; 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 18′×33′. (b) 15′×30′. (v) 1.5′ around the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1582 lb./ac. (ii) (a) 341.7 lb./ac. (b) 216.8 lb./ac. (iii) P effect is highly significant. V effect is significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	V_0	V_1	V_2	S_0	S_1	S_2	N_0	N_1	N_2	Mean	P_0	P_1	P_2
F_0	1575	1652	1511	1556	1552	1630	1484	1621	1631	1579	1358	1587	1792
F_1	1635	1660	1458	1543	1620	1590	1504	1590	1660	1585	1356	1667	1730
Mean	1605	1656	1485	1550	1586	1610	1494	1607	1647	1582	1357	1627	1761
P_0	1424	1414	1235	1291	1319	1462	1347	1352	1376				
P_1	1574	1751	1556	1616	1636	1629	1555	1695	1633				
P_2	1819	1803	1663	1742	1804	1738	1582	1773	1931				
N_0	1534	1548	1400	1488	1543	1452							
N_1	1602	1601	1615	1548	1554	1716							
N_2	1680	1819	1439	1613	1662	1663							
S_0	1560	1559	1530										
S_1	1633	1660	1466										
S_2	1624	1748	1458										

S.E. of difference of two	
1. V, S, N or P marginal means	=65.8 lb./ac.
2. F marginal means	=34.1 lb./ac.
3. F means at the same level of V, S, N or P	=59.0 lb./ac.
4. V, S, N or P means at the same level of F	=77.9 lb./ac.
S.E. of body af any table not involving F	=80.5 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(93).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'I'.**

Object :—To find out the economic rate of irrigation for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 24.10.1959. (iv) (a) One ploughing and 2 harrowings. (b) Drilling. (c) 80 lb./ac. (d) 9″ between rows. (e)—. (v) 5 C.L/ac. of F.Y.M. (vi) K.C.N.-133. (vii) As per treatments. (viii) 3-4 interculturings and 2 weedings. (ix) 12.99″. (x) 26.2.1960.

2. TREATMENTS :

6 levels of irrigation : $I_1=5$, $I_2=7$, $I_3=9$, $I_4=11$, $I_5=13$ and $I_6=15$ irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 45′×27′. (b) 42′×24′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1316 lb./ac. (ii) 97.15 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment.	I_1	I_2	I_3	I_4	I_5	I_6
Av. yield	1058	1123	1265	1323	1556	1575

S.E./mean =48.57 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(13).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To study the effect of different intervals of irrigation on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) *Mug*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 20.11.1959. (iv) (a) Three ploughings; 2 harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9″. (e)—. (v) 40 lb./ac. of N+40 lb./ac. of P_2O_5 broadcast. (vi) N.P.—710. (vii) As per treatments. (viii) 3 weedings. (ix) Nil. (x) 23.3.1960.

2. TREATMENTS :

$I_1=5$ irrigations at interval of 18 days.
$I_2=7$ irrigations at interval of 13 days.
$I_3=9$ irrigations at interval of 10 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 70′×26.25′. (b) 60′×18.75′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Light attack of grass hoppers and stem-borers. (iii) Grain yield. (iv) (a) 1955—contd. (modified in 1959). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1315 lb./ac. (ii) 74.38 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	I_1	I_2	I_3
Av. yield	1303	1355	1286

S.E./mean =30.37 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(23).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To study the effect of different intervals of irrigation on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Sann for G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 27 and 28.11.1958. (iv) (a) 2 ploughings. (b) Drilling. (c) 60 lb./ac. (d) 9″. (e) —. (v) 100 lb./ac. of P_2O_5+100 lb./ac. of manure mixture+100 lb./ac. of A/S. (vi) N.P.-710. (vii) As per treatments. (viii) Two weedings. (ix) 13″. (x) 21.3.1959, 11 and 15.4.1959.

2. TREATMENTS :

3 intervals of irrigation : I_1=14, I_2=21 and I_3=28 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 54′×20′. (b) 44′×8.25′. (v) 5′×6′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of rust. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Junagadh, Jamnagar and Umrala. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2302 lb./ac. (ii) 580.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	I_1	I_2	I_3
Av. yield	1439	4140	1327

S.E./mean =290.1 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(21).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'I'.**

Object :—To find out the optimum level of irrigation for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) Nil. (ii) (a) Clayey loam to medium black. (b) N.A. (iii) 14.11.1959. (iv) (a) 1 ploughing and harrowing. (b) to (e) N.A. (v) 40 lb./ac. of N and 40 lb./ac. of P_2O_5. (vi) N.P.-798. (vii) As per treatments. (viii) One weeding and 1 interculturing. (ix) 30″. (x) N.A.

2. TREATMENTS :

6 levels of irrigation : I_1=5, I_2=7, I_3=9, I_4=11, I_5=13 and I_6=15 irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 72′×45′. (iii) 4. (iv) (a) 36′×15′. (b) 30′×9′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1477 lb./ac. (ii) 179.9 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	I_1	I_2	I_3	I_4	I_5	I_6
Av. yield	1255	1531	1422	1570	1409	1674

S.E./mean =89.95 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 56(99).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'I'.**

Object :—To find out the optimum number of irrigations for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 1.11.1956. (iv) (a) N.A. (b) Drillings. (c) 90 lb./ac. (d) 9″ between rows. (e) —. (v) Sann as G.M. at the rate of 20,000 lb./ac. buried in soil during *Kharif*. (vi) Kenphad—28. (vii) As per treatments. (viii) N.A. (ix) N.A. (x) 13.3.1957.

2. TREATMENTS :

3 levels of irrigation : $I_1=4$, $I_2=5$ and $I_3=6$ irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 30′×12′. (b) 24′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1160 lb./ac. (ii) 207.5 lb./ac. (iii) Treatments differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	I_1	I_2	I_3
Av. yield	951	1219	1311

S.E./mean =84.73 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 57(78).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'I'.**

Object :—To find out the optimum number of irrigations for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp for G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 28.10.1957. (iv) (a) One ploughing, two harrowings. (b) to (e) N.A. (v) 30 lb./ac. of N as A/S. (vi) Kenphad—28 (medium). (vii) As per treatments. (viii) N.A. (ix) Nil. (x) 3.3.1958.

2. TREATMENTS :

3 levels of irrigation : $I_1=4$, $I_2=5$ and $I_3=6$ irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 30′×12′. (b) 24′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, grain and fodder yield. (iv) (a) 1956—1957. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 641 lb./ac. (ii) 112.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	I_1	I_2	I_3
Av. yield	576	608	740

S.E./mean =45.98 lb./ac.

Crop :- Wheat. **Ref :- Gj. 59(99).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'I'.**

Object :—To find out the optimum number of irrigations for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann for G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 5.11.1959. (iv) (a) Nil. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e)—. (v) Sann G.M. (vi) N.P. 718. (vii) As per treatments. (viii) Nil. (ix) 25.98″ (during the whole year). (x) 11.3.1960.

2. TREATMENTS :

3 levels of irrigation : $I_1=5$, $I_2=7$ and $I_3=9$ irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 18′×30′. (b) 15′×27′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) 1956—contd. (not conducted in 1958). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1636 lb./ac. (ii) 121.6 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	I_1	I_2	I_3
Av. yield	1549	1631	1728

S.E./mean =49.67 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 57(30).**
Site:- Agri. Res. Stn., Halvad. **Type :- 'IC'.**

Object :—To find out a suitable interval of irrigation and plot size for Wheat in canal area.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann G.M. (c) 200 lb./ac. of Super. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 6.11.1957. (iv) (a) Ploughing, harrowing and cultivation by drill. (b) to (e) N.A. (v) 200 lb./ac. of single super incorporated in soil before soaking dose, 200 lb./ac. of manure mixture, 200 lb./ac. of A/S and 200 lb./ac. of castor cake. Broadcast before sowing. (vi) N.P. 710. (vii) As per treatments. (viii) Weeding. (ix) Nil. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 sizes of plot (gross) : $S_1=1$ *guntha*, $S_2=2$ *gunthas*.

Sub-plot treatments :

3 levels of irrigation : $I_1=7$ irrigations at 14 day's interval, $I_2=5$ irrigations at 21 day's interval and $I_3=3$ irrigations at 28 day's interval.

3. DESIGN:

(i) Split-plot design. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) According to treatments. (b) 363 Sq. ft. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plant, no. of earheads, length of earheads and no. of spikes. (iv) (a) 1957—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1712 lb./ac. (ii) (a) 288.7 lb./ac. (b) 175.6 lb./ac. (iii) Main effect of I is highly significant. Others are not significant. (iv) Av. yield of grain in lb./ac.

	I_1	I_2	I_3	Mean
S_1	1762	1754	1391	1636
S_2	2000	1799	1568	1789
Mean	1881	1777	1480	1712

S.E. of difference of two

1. S marginal means =117.8 lb./ac.
2. I marginal means = 87.8 lb./ac.
3. I means at the same level of S =124.2 lb./ac.
4. S means at the same level of I =155.5 lb./ac.

Crop :- Wheat. **Ref :- Gj. 58(22).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'IC'.**

Object :—To find out a suitable plot size and a proper interval of irrigation for Wheat.

1. BASAL CONDITIONS :

(a) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 27 and 28.11.1958. (iv) (a) One ploughing, 2 harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9″ between rows. (e) —. (v) 100 lb./ac. of A/S+100 lb./ac. of manure mixture broadcast and 54 lb./ac. of P_2O_5 drilled on 11.11.1958. (vi) N.P. 710. (vii) As per treatments. (viii) One interculturing. (ix) N.A. (x) 21.3.1959.

2. TREATMENTS :

Main-plot treatments :

2 sizes of plot (gross) : S_1=1 *guntha* and S_2=2 *gunthas.*

Sub-plot treatments :

3 intervals of irrigation : I_1=14, I_2=21 and I_3=28 days.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) S_1= 54′×20′ and S_2=108′×20′. (b) S_1=44′×8.25′ and S_2=98′×8.25′.(v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1381 lb.ac. (ii) (a) 236.4 lb./ac. (b) 127.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	I_1	I_2	I_3	Mean
S_1	1439	1351	1342	1377
S_2	1455	1400	1301	1385
Mean	1447	1375	1321	1381

S.E. of difference of two

1. S marginal means = 96.5 lb./ac.
2. I marginal means = 63.8 lb./ac.
3. I means at the same level of S = 90.1 lb./ac.
4. S means at the same level of I =121.4 lb./ac.

Crop :- Wheat. **Ref Gj. 55(96).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'IC'.**

Object :—To find out the optimum interval of irrigation and spacing for Wheat.

1. BASAL CONDITIONS :

(i) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 20.11.1955. (iv) (a) One ploughing, 2 harrowings. (b) Dibbling. (c) —. (d) As per treatments. (e) 2-3 seeds/dibble. (v) 30 lb./ac. of N+18 lb./ac. of P_2O_5. (vi) Kenphad—28. (vii) As per treatments. (viii) One weeding. (ix) N.A. (x) 30, 31.3.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S_1=3 way sowing, S_2=9″ between rows and S_3=12″×4″.
(2) 3 intervals of irrigation : I_1=6 irrigations at 15 days interval, I_2=5 irrigations at 20 days interval and I_3=4 irrigations at 25 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) 30′×18′. (b) 24′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 975 lb./ac. (ii) 94.83 lb./ac. (iii) Main effects of S and I are highly significant. Interaction S×I is not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
I_1	1127	1289	862	1093
I_2	1044	1060	774	959
I_3	1013	954	651	873
Mean	1061	1101	762	975

S.E. of marginal mean =24.48 lb./ac.
S.E. of body of table =42.41 lb./ac.

Crop :- Wheat ***(Rabi)*.** **Ref :- Gj. 54(T.C.M.).**
Site :- Paliyad. **Type :- 'IM'.**

Object :—Type VII—To study the effects of N and P_2O_5 along with different intensities of irrigation on Wheat

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Medium black soils of trap and gneissic origin. (v) Irrigated. (vi) N.A. (vii) N.P. 715. (viii) and (ix) N.A. (x) End of March.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N_0=0, N_1=20 and N_2=40 lb./ac.
(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=20 and P_2=40 lb./ac.
(3) 3 levels of irrigation : I_1=7, I_2=8 and I_3=9 irrigations.

Super ploughed into the soil while A/S broadcast just before sowing.

3. DESIGN :

(i) 3^3 Fact. confd. (ii) (a) 3 blocks/replication ; 9 plots/block. (iii) 1. (iv) (a) 36′×15′. (b) 33′×12′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1847 lb./ac. (ii) 196.5 lb./ac. (iii) Only N effect is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	I_1	I_2	I_3
N_0	1397	1591	1815	1601	1506	1544	1753
N_1	1975	1950	1882	1906	1820	2103	1883
N_2	1808	2141	2060	2003	1907	2012	2091
Mean	1727	1894	1919	1847	1744	1886	1909
I_1	1580	1830	1823				
I_2	1900	1938	1827				
I_3	1700	1913	2113				

S.E. of any marginal mean = 65.5 lb./ac.
S.E. of body of any table =113.4 lb./ac.

Crop :- Wheat *(Rabi)*. **Ref :- Gj. 55(T.C.M.).**
Site :- Paliyad. **Type :- 'IM'**

Object :—Type VII—To study the effect of N and P_2O_5 along with different intensities of irrigation on Wheat.

1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 54(TCM) on page 133.

5. RESULTS :

(i) 1636 lb./ac. (ii) 228.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	I_1	I_2	I_3
P_0	1348	1530	1541	1473	1384	1546	1489
P_1	1507	1817	1777	1700	1576	1716	1809
P_2	1617	1757	1827	1734	1788	1582	1831
Mean	1491	1701	1715	1636	1583	1614	1710
I_1	1465	1600	1683				
I_2	1416	1738	1689				
I_3	1591	1766	1773				

S.E. of any marginal mean = 76.2 lb./ac.
S.E. of body of any table =132.0 lb./ac.

Crop :- Wheat. **Ref :- Gj. 54(1).**
Site :- Agri. Res. Stn., Arnej. **Type :- 'D'.**

Object :—To study the effect of hormone treatment on Wheat yield.

1. BASAL CONDITIONS :

(i) (a) Wheat after gram. (b) Gram. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 24.10.1954. (iv) (a) Four harrowings prior to sowing. (b) to (e) N.A. (v) Nil. (vi) A-206 (medium). (vii) Unirrigated. (viii) Weeding. (ix) 24.10″. (x) 17.3.1955.

2. TREATMENTS :

Wheat seed treated with 2-4 D as

1. 0.01 P.P.M. for 30 minutes.
2. 0.10 P.P.M. for 30 minutes.
3. 1.00 P.P.M. for 30 minutes.
4. 0.01 P.P.M. for 20 minutes.
5. 0.10 P.P.M. for 20 minutes.
6. 1.00 P.P.M. for 20 minutes.
7. Untreated dry seed.

3. DESIGN :

(i) R.B.D. (ii) 7. (iii) 4. (iv) (a) 36′×18′. (b) 30′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL .

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—54. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 721 lb./ac. (ii) 104.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7
Av. yield	685	717	704	787	690	819	647

S.E./mean =52.33 lb./ac.

Crop :- Jowar *(Rabi)*. **Ref :- Gj. 54(22).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the effect of the leguminous crop (Chinamug) raised with and without P_2O_5 on succeeding *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) *Chinamug—Jowar*. (b) *Chinamug*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 15.10.1954. (iv) (a) N.A. (b) Drilling. (c) 6 lb./ac. (d) Between rows 24″ apart. (e) N.A. (v) Nil. (vi) *Jowar* No. 8. (vii) Unirrigated. (viii) One thinning and one interculturing. (ix) 0.4″. (x) 20.2.1955.

2. TREATMENTS :

1. 0 lb./ac. of P_2O_5 as Super.
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *Kharif* and sown in *Rabi*. Manured with 10 C.L./ac. of F.Y.M.

Manures applied to the previous crop *Chinamug*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48′×30′. (b) 36′×18′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) Growth quite even and healthy. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948 (*Kharif*) to 1954 (*Rabi*). (b) No. (c) Nil. (v) (a) Mohol. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1258 lb./ac. (ii) 306.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	1177	1075	1224	1356	1427

S.E./mean =137.1 lb./ac.

Crop :- Jowar *(Rabi)*. **Ref :- Gj. 54(26).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the usefulness of chinamug as a G.M. for succeeding *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Til.* (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) *Chinamug*—16.6.1954 ; *Jowar*—23.9.1954. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. for *chinamug* and 6 lb./ac. for *jowar.* (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 interculturings, 1 weeding and 1 thinning. (ix) 44.82″. (x) 19.8.1954 for *chinamug* and 23.2.1955 for *jowar*.

2. TREATMENTS :

1. *Chinamug* in *kharif* and buried in *situ.*
2. *Chinamug* in *kharif* and buried in treatment 3.
3. No *Chinamug* in *kharif* but buried from treatment 2.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) 90′×12′. (b) 86′×8′. (v) 2′ alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1122 lb./ac. (ii) 90.90 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	1124	1094	1147

S.E./mean =64.20 lb./ac.

Crop :- Jowar *(Rabi)*. **Ref :- Gj. 55(12).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the usefulness of chinamug as G.M. for succeeding *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Manure mixture at 80 lb./ac. (ii) (a) Black cotton soil. (b) N.A. (iii) *Chinamug* on 7.7.1955; *Jowar* on 16.10.1955. (iv) (a) N.A. (b) Drilling. (c) 1 lb./ac. for *chinamug* and 6 lb./ac. for *jowar.* (d) 2′×4″. (e) N.A. (v) Nil. (vi) *Jowar* No. 8. (vii) Unirrigated. (viii) 1 thinning, 2 interculturings and 1 weeding. (ix) 31.65″. (x) *Chinamug* on 16.9.1955 and *Jowar* on 4.3.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(26) above.

4. GENERAL :

(i) Unsatisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 770.0 lb./ac. (ii) 94.02 lb./ac. (iii) Treatments do not differ significantly. (vi) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	797	831	682

S.E./mean =66.5 lb./ac.

Crop :- Jowar *(Rabi).* **Ref :- Gj. 54(24).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the usefulness of sann as G.M. for succeeding *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Til.* (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 16.6.1954. for sannhemp; 23.9.1954 for *jowar.* (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. for sann, 6 lb./ac. for *jowar.* (d) 2′ between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 interculturings and 1 weeding. (ix) 44.82″. (x) 18.8.1954 for sannhemp; 23.2.1955 for *jowar.*

2. TREATMENTS :

1. Sann grown for G.M. buried in *situ.*
2. Sann grown for G.M. and cut for burying in treatment 3.
3. Buried stripped leaves and tender shoots from treatment 2.
4. No manure.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 90′×12′. (b) 86′×8′. (v) 2′ alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5, RESULTS :

(i) 1574 lb./ac. (ii) 128.8 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	1672	1519	1557	1549

S.E./mean =91.1 lb./ac.

Crop :- Jowar *(Rabi).* **Ref :- Gj. 55(11).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the usefulness of sann as G.M. for succeeding *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Manure mixture at 80 lb./ac. (ii) (a) Black cotton soil. (b) N.A. (iii) 7.7.1955 for sannhemp and 16.10.1955 for *jowar.* (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. for sann, 6 lb./ac. for *jowar.* (d) 2′×4″. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 thinning and 2 interculturings. (ix) 31.65″. (x) 18.9.1955 for sannhemp and 4.3.1956 for *jowar.*

2. TREATMENTS and 3. DESIGN

Same as in expt. no. 54(24) above.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1955. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS:

(i) 925 lb./ac. (ii) 97.37 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	973	817	993	918

S.E./mean =68.85 lb./ac.

Crop :- Jowar ***(Rabi).*** **Ref :- Gj. 56(13).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the effect of various micro-nutrients on Jowar crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 23.10.1956. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 24″ between rows. (e) N.A. (v) 20 lb./ac. of N as A/S at sowing+20 lb./ac. of P_2O_5 as Super. (vi) *Jowar* No. 8. (vii) Unirrigated. (viii) 1 thinning and 2 interculturings. (ix) 40.59″. (x) 8.3.1957.

2, TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

1. 2 levels of Zinc as Zn SO_4 : $A_0=0$ and $A_1=$Zn SO_4 at 9 lb.+Lime at 2 lb.+100 gallons of water.
2. 2 levels of Manganese as Mn SO_4 : $B_0=0$, $B_1=$Mn SO_4 at 3 lb.+Lime at 2 lb.+100 gallons of water
3. 2 levels of Copper as $CuSO_4$: $C_0=0$, $C_1=CuSO_4$ at 8 lb.+Lime at 8 lb.+100 gallons of water.
4. 2 levels of Molybdenum as Sodium Molybdate+$CaCO_3$: $D_0=0$ and $D_1=$Sodium Molybdate at 3 ozs.+100 gallons of water.
5. 2 levels of Boron as Borax : $E_0=0$ and $E_1=$Borax at 2 lb.+Bentonite at 0.5 lb.+100 gallons of water.

Total quantity of foliar spray is 130 gallons/ac. All sprays contain 3½ pints of Tenal (Burmah-Shell) per 100 gallons as spreader and sticker.

. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) 96′×192′. (iii) 4. (iv) (a) 24′×24′. (b) 16′×16′. (v) 4′ alround. (vi) Yes.

4. GENERAL :

(i) Due to late and excessive rains growth was stunted and unsatisfactory. (ii) Lavala infection effected the crop. Grass hoppers and stem borer attack. (iii) Grain and fodder yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 628.5 lb./ac. (ii) 247.2 lb./ac. (iii) None of the effects is significant. (iv) Table of mean and differential responses of grain in lb ./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	−8.4	—	—	9.9	−26.7	14.3	−31.1	−14.7	− 2.1	−32.6	15.8
Mu	−28.2	−9.9	−46.6	—	—	−12.2	−44.2	−97.0	40.5	21.4	−77.8
Cu	−56.4	−33.6	−79.1	−40.3	−72.4	—	—	−64.9	−47.8	−27.1	−85.6
Mo	−14.3	−20.6	−8.1	−83.1	54.4	−22.9	−5.8	—	—	31.9	−60.6
B	−68.8	−93.0	−44.6	−118.4	−19.2	−39.5	−98.0	−22.5	−115.1	—	—

S.E. of mean response =43.7 lb./ac. S.E. of differential response =61.8 lb./ac.

Crop :- Jowar ***(Rabi).*** **Ref :- Gj. 57(11).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the effect of various micro-nutrients on Jowar crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Black cotton soil. (b) N.A. (iii) 20.9.1957. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 24″ between rows. (e) N.A. (v) 20 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super (vi) *Jowar* No.8. (vii) Unirrigated. (viii) 1 thinning, 1 interculturing. (ix) 20.83″. (x) 30.1.1958 and 31.1.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(13) on page 138.

4. GENERAL :

(i) Growth satisfactory, rains irrigular and scanty. (ii) Moderate damage due to *lavala* infection. (iii) Grain and fodder yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and) (vii) Nil.

5. RESULTS :

(i) 729 lb./ac. (ii) 127.2 lb./ac. (iii) Intraction B×C alone is significants, (iv) Table of mean and differential responses of grain in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	−4.5	—	—	− 3.0	−5.9	− 4.5	− 4.5	20.6	−29.6	−37.6	28.7
Mn	26.1	27.5	24.6	—	—	70.7	−18.5	− 8.5	60.7	30.8	21.3
Cu	−3.6	− 3.6	− 3.6	41.0	−48.3	—	—	−16.7	9.4	−35.4	−42.7
Mo	−21.9	3.2	−47.0	−56.5	12.6	−35.0	− 8.7	—	—	−10.8	−33.0
B	15.8	−17.3	49.0	20.6	11.1	54.9	−23.2	26.9	4.7	—	—

S.E. of mean response =22.5 lb./ac. S.E. of differential response =31.8 lb./ac

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Crop :- Jowar *(Rabi)*. **Ref :- Gj. 58(4).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'M'.**

Object :—To study the effect of various micro-nutrients on Jowar crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 26 C.L./ac. of F.Y.M. (ii) (a) Black cotton soil. (b) N.A. (iii) 20.10.1958. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 24″ between rows. (e) N.A. (v) Nil. (vi) *Jowar* No. 8. (vii) Unirrigated. (viii) 1 Thinning and interculturing. (ix) N.A. (x) 24.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(13) on page 138.

4. GENERAL :

(i) Rains irregular and scanty, growth satisfactory. (ii) Moderate damage due to *lavala* infection. (iii) Grain and fodder yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 958 lb./ac. (ii) 212.3 lb./ac. (iii) Only C effect is highly significant. (iv) Table of mean and differential responses of grain in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	16	—	—	64	−32	26	6	10	23	59	−26
Mn	2.5	51	−46	—	—	46	−41	62	−57	26	−21
Cu	−119	−109	−129	− 76	−163	—	—	−124	−114	−104	−134
Mo	−40	−46	−33	20	−99	−45	−35	—	—	−83	2
B	39	82	−3	62	15	54	24	−3	82	—	—

S.E. mean response =37.5 lb./ac. S.E. of differential response =53.1 lb./ac.

Crop :- Jowar *(Kharif).* **Ref :- Gj. 56(20).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'M'.**

Object :—To find out suitable time and method of application of A/S to Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Coarse sandy loam. (b) Refer soil analysis, Deesa. (iii) 20.8.1956. (iv) (a) Drilling with four coultered drill. (b) N.A. (c) 16 lb./ac. (d) Rows—12″ apart. (e) N.A. (v) 3 C.L./ac. of F.Y.M. broadcasted 15 days before sowing. (vi) *Malvan* (local). (vii) Unirrigated. (viii) One weeding and one interculturing, (ix) 35.39″. (x) 25.11.1956.

2. TREATMENTS :

40 lb./ac. of N as A/S applied as follows :

1. Whole dose broadcast at sowing.
2. ½ dose at sowing (broadcast)+½ dose one month after sowing.
3. Whole dose drilled at sowing
4. ½ dose drilled at sowing+½ dose drilled in one month after sowing.
5. Whole dose broadcast 15 days prior to sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 36′×18′. (b) 30′×12′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) There was some attack of birds. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Surat and Talod. (b) Nil. (vi) and (vii) Nil.

5. RESULTS

(i) 625 lb./ac. (ii) 149.7 lb./ac. (iii) The treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	513	568	571	744	730

S.E./mean =66.9 lb./ac.

Crop :- Jowar *(Kharif).* **Ref :- Gj. 57(19).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'M'.**

Object :—To find out suitable time and method of application of A/S to Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* fodder. (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Dessa. (iii) 25.7.1957. (iv) (a) Two ploughings. (b) Drilling with four coultered drill. (c) 16 lb./ac. (d) Rows 12″ apart. (e) —. (v) 3 C.L./ac. of F.Y.M. broadcast 15 days before sowing. (vi) *Malvan* (local). (vii) Unirrigated. (viii) One harrowing and one interculturing. (ix) 14.57″. (x) 12 to 14.12.1957.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no. 56(20) above.

4. GENERAL :

(i) The germination was slightly defective. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Talod, Surat. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 229 lb./ac. (ii) 94.0 lb./ac. (iii) The treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	184	293	174	242	253

S.E./mean =42.0 lb./ac.

Crop :- Jowar ***(Kharif)*****.** **Ref :- Gj. 58(12).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'M'.**

Object :—To find out suitable period and method of application of A/S to Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Castor. (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Deesa. (iii) 23.8.1958. (iv) (a) 3 ploughings and 2 harrowings. (b) Drilling. (c) 16 lb./ac. (d) 12" between rows. (e) —. (v) 3 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5 as Super. (vi) *Malvan* (local). (vii) Unirrigated. (viii) 2 interculturings. (ix) 14.1". (x) 8.12.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(20) on page 140.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Talod and Surat. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 955 lb./ac. (ii) 86.5 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	934	920	961	1042	915

S.E./mean =38.7 lb./ac.

Crop :- Jowar. **Ref :- Gj. 55(47).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To find the suitable time and method of application of A/S to Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 29.7.1955. (iv) (a) N.A. (b) Drilled. (c) 8 lb./ac. (d) 3'×1'. (e) —. (v) 5 C.L./ac. of F.Y.M. +20 lb./ac. of P_2O_5 as B.M. (vi) B.P.-53. (vii) Unirrigated. (viii) 2 thinnings, 1 wedding and 3 interculturings. (ix) 27". (x) 27.1.1956.

2. TREATMENTS :

40 lb./ac. of N as A/S applied as
1. Whole dose broadcast at sowing.
2. ½ dose broadcasted at sowing and ½ after one month of sowing.
3. Whole dose drilled at sowing.
4. ½ dose drilled at sowing and ½ drilled one month after sowing.
5. Whole dose broadcast 15 days before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 36'×21'. (b) 30'×15'. (v) 3' alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1955—contd. (b) No. (c) N.A. (v) (a) Deesa and Talod. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1472 lb./ac. (ii) 197.4 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	1545	1525	1465	1395	1430

S.E./mean =88.2 lb./ac.

Crop :- Jowar. **Ref :- Gj. 56(55).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To find out the suitable time and method of application of A/S to Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) Black cotton soil. (iii) 16.8.1956. (iv) (a) N.A. (b) Drilled. (c) 8 lb./ac. (d) 3′×1′. (e) N.A. (v) 5 C.L./ac. of F.Y.M+20 lb./ac. of P_2O_5 as B.M. (vi) B.P.—53. (vii) Unirrigated. (viii) One thinning and 3 interculturings. (ix) 41.74″. (x) 13.1.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(20) on page 140.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Deesa and Talod. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2471 lb./ac. (ii) 202.5 lb./ac. (iii) Treatments differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	2362	2587	2542	2667	2198

S.E./mean =90.5 lb./ac.

Crrp :- Jowar *(Kharif)*. **Ref :- Gj. 57(63).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To know the suitable time and method of application of A/S to Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 17.8.1957. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.-53. (vii) Irrigated. (viii) 2 interculturings, 1 weeding and 1 thinning. (ix) 33.41″. (x) 22.2.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(20) on page 140.

4. GENERAL :

(i) Crop suffered due to lack of rainfall from 2nd September onward. After irrigation the crop reached its normal growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

3. RESULTS :

(i) 510 lb./ac. (ii) 51.90 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	525	435	539	532	520

S.E./mean =23.2 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(46).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the suitable time and method of application of A/S to Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 4.8.1958. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5 at the time of sowing. (vi) B.P. 53. (vii) Unirrigated. (viii) 5 interculturings, 1 weeding and 2 thinnings. (ix) 44.81″. (x) 27.2.1959, 7.3.1959.

2. TREATMENTS to 3. DESIGN :

Same as in expt. no. 55 (47) on page 140.

4. GENERAL :

(i) Growth stunted in the early stage but later on it grew vigorously and was normal by harvesting time. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 550 lb./ac. (ii) 65.3 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	534	507	565	524	618

S.E./mean =29.2 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 59(29).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the residual effect of organic manures and fertilizers applied to previous crop of cotton on Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 14.8.1959. (iv) (a) Nil. (b) Dibbling. (c) 8 to 10 lb./ac. (d) 3′×1′. (e)—. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (iv) 7.77″. (x) 4.3.1960.

2. TREATMENTS :

1. Control (no manure)
2. Bulky manure (usual dose of F.Y.M. i.e. 5 C.L./ac. F.Y.M).
3. Bulky manure (half of usual dose of F.Y.M).
4. N,P,K fertilizers equivalent to usual dose of F.Y.M.
5. N,P,K fertilizers equivalent to half the usual dose of F.Y.M.
6. Bulky manure (usual dose)+N,P,K fertilizers equivalent to usual dose of F.Y.M.
7. Bulky manure (half of usual dose of F.Y.M)+N,P,K fertilizers equivalent to half the usual dose of F.Y.M.
8. Recommended dose of N and P (i.e. 40 lb./ac. of N+20 lb./ac. of P_2O_5)+N,P,K fertilizers equivalent to usual dose of F.Y.M.
9. Half of the dose in treatment no. 8.

These manure and fertilizers were applied to previous cotton crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 108′×75′. (iii) 4. (iv) (a) 36′×25′. (b) 24′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) (a) (b) N.A. (vi) Nil. (vii) First year of the residual effect.

5. RESULTS :

(i) 1025 lb./ac. (ii) 124.1 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8	9
Av. yield	1010	1033	991	972	1063	1074	1085	1015	983

S.E./mean =62.1 lb./ac.

Crop :- Jowar. **Ref :- Gj. 54(65).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the residual effect of previous Tur crop raised with or without P_2O_5 on succeeding crop Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton and *Tur*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.8.1954. (iv) (a) Three harrowings as preparatory tillage. (b) Drilling. (c) 10 lb./ac. (d) 2′×1′. (e) —. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) One thinning, 1 weeding and 2 interculturings. (ix) 81.54″. (x) 17.2.1955.

2. TREATMENTS :

1. No P_2O_5 as in previous year.
2. 50 lb./ac. of P_2O_5 as Super in previous year.
3. 100 lb./ac. of P_2O_5 as Super in previous year.
4. 150 lb./ac. of P_2O_5 as Super in previous year.
5. Cotton *suyog* in previous year.

3. DESIGN :

(i) L. Sq. (ii) 5. (iii) 5. (iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ alround. (vi) Yes.

4. GENERAL :

(i) Crop suffered due to heavy rains. (ii) No. (iii) Periodical height, number of stand and weight of ***kadbi.*** (iv) (a) 1949 to 1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Abnormal season.

5. RESULTS :

(i) 628 lb./ac. (ii) 102.4 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	653	737	568	713	472

S.E./mean =46.0 lb./ac.

Crop :- Jowar ***(Kharif).*** **Ref :- Gj. 54(61).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To find out the optimum dose of N, P and F.Y.M. for Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.8.1954. (iv) (a) Three harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) N.A. (v) Nil. (vi) B.P.—53 (late). (vii) Unirrigated. (viii) 4 interculturings, 1 weeding and 1 thinning. (ix) 81.54″. (x) 11.2.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : $N_1=40$, $N_2=60$ and $N_3=80$ lb./ac.
(2) 2 levels of P_2O_5 : $P_1=20$ and $P_2=40$ lb./ac.
(3) 2 levels of F.Y.M. : $F_1=5$ and $F_2=10$ C.L./ac.

3. DESIGN :

(i) 3×2^2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 42′×18′. (b) 30′×12′. (v) 6′×3′. (vi) Yes.

4. GENERAL :

(i) Due to continuous rainfall *Jowar* growth was checked for want of vapsa conditions of soil. No lodging. (ii) Attack of stem-borer. (iii) Grain and fodder yield. (iv) (a) 1948 to 1954 (modified in 1952). (b) Two sets of plots for the same expt. were kept. Hence treatments assigned to same plots in alternate year. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1784 lb./ac. (ii) 159.5 lb./ac. (iii) Only N and P effects are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	P_0	P_1
F_0	1613	1880	1869	1787	1677	1897
F_1	1516	1902	1924	1781	1721	1840
Mean	1565	1891	1896	1784	1699	1869
P_0	1373	1803	1923			
P_1	1757	1979	1870			

S.E. of marginal mean of N	=39.89 lb./ac.
S.E. of marginal mean of P or F	=32.57 lb./ac.
S.E. of body of N×P or N×F table	=56.42 lb./ac.
S.E. of body of P×F table	=46.05 lb./ac.

Crop :- Jowar. **Ref :- Gj. 54(62).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To see whether Calcium cyanide could replace A/S for Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 20.8.1954. (iv) (a) Two harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.—53 (late). (vii) Unirrigated. (viii) One thinning, 1 weeding and 2 interculturings. (ix) 81.54″. (x) 16.2.1955.

2. TREATMENTS :

4 sources of 60 lb./ac. of N : S_1=A/S, S_2=A/S and G.N.C. in 1 : 1 ratio, S_3=Calcium cyanide and S_4= G.N.C. and Calcium cyanide in 1 : 1 ratio.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 74′×30′. (b) 62′×18′. (v) 6′ alround. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Attack of stem-borer to about 30%. There were also some patches of striga in some of the plots. (iii) Height, grain and *kadbi* yield. (iv) (a) 1952 to 1954. (b) Only in alternate years. (c) Nil. (v) (a) and (b) N.A. (vi) Season was abnormal. (vii) Nil.

5. RESULTS :

(i) 1056 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4
Av. yield	1068	1207	1032	918

S.E./mean = N.A.

Crop :- Jowar ***(Kharif).*** **Ref :- Gj. 57(66).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To see the effect of N, P and K combined with F.Y.M. in different doses on growth and yield of *Kharif* Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M.+10 lb./ac. of N as A/S. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 29.7.1957. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) N.A. (v) Nil. (vi) *Jowar* B.P.-53. (vii) Unirrigated. (viii) 1 thinning, 1 weeding and 2 interculturings. (ix) 33.41″. (x) 5.2.1958.

2. TREATMENTS:

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N as A/S, $N_0=0, N_1=30$ and $N_2=60$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.
(3) 3 levels of K_2O : $K_0=0$, $K_1=30$ and $K_2=60$ lb./ac.
(4) 3 levels of F.Y.M. : $F_0=0$, $F_1=2\frac{1}{2}$ and $F_2=5$ lb./ac.

3. DESIGN :

(i) 3^4 confd. (ii) (a) 9 plots/block and 9 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 21′×36′. (b) 15′×30′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Growth was somewhat checked for want of rains and late sowing. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 932 lb./ac. (ii) 149.1 lb./ac. (iii) Only N effect is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	F_0	F_1	F_2	K_0	K_1	K_2	Mean
P_0	796	943	1112	885	963	1004	966	993	893	950
P_1	758	963	965	927	841	919	880	907	899	895
P_2	854	966	1304	899	1012	943	913	938	1004	951
Mean	803	957	1037	904	939	955	919	946	932	932
K_0	769	938	1051	952	896	910				
K_1	824	996	1018	869	973	996				
K_2	816	938	1043	891	946	960				
F_0	786	921	1004							
F_1	788	999	1029							
F_2	835	952	1079							

S.E. of any marginal mean =28.7 lb./ac.
S.E. of body of any table =49.7 lb./ac.

Crop :- Jowar.
Ref :- Gj. 58(83).
Site :- Agri. Res. Stn., Surat.
Type :- 'M'.

Object :—To see the effect of N, P and K combined with F.Y.M. on yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar* (b) Cotton. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 4.8.1958. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e)—. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 44.81″. (x) 27.2.1959.

2. TREATMENTS to 3. DESIGN :

Same as in expt. no. 57 (66) on page 144.

4. GENERAL :

(i) Growth satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Timely agricultural oprations delayed due to continues rains.

5. RESULTS:

(i) 870 lb./ac. (ii) 131.8 lb./ac. (iii) N F' effect is highly significant. K and F effects and interaction N×P are significant. No other effect is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	F_0	F_1	F_2	K_0	K_1	K_2	Mean
P_0	861	821	1045	828	918	982	863	904	961	909
P_1	766	889	891	800	896	850	825	941	780	849
P_2	791	910	853	824	864	866	755	911	888	851
Mean	806	873	930	817	893	899	814	919	876	870
K_0	765	839	839	773	821	849				
K_1	842	903	1011	821	979	956				
K_2	812	878	939	858	878	893				
F_0	799	817	865							
F_1	832	896	950							
F_2	787	907	1004							

S.E. of any marginal mean =25.3 lb./ac.

S.E. of body of any table =45.9 lb./ac.

Crop :- Jowar. **Ref :- Gj. 59(75).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To see the effect of N, P and K combined with F.Y.M. on yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 23.9.1959. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e)—. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) Two weedings and 2 interculturings. (ix) 70.77″. (x) 2.3.1960.

2. TREATMENTS to 3. DESIGN :

Same as in expt. no. 57 (66) on page 144.

4. GENERAL :

(i) Flood water from river Tapti entered the expti. area and the crop was damaged to a certain extent. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—contd. (b) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1087 lb./ac. (ii) 169.9 lb./ac. (iii) N effect is highly significant, interaction K×F is significant, While all other effects are not significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	F_0	F_1	F_2	K_0	K_1	K_2	Mean
P_0	934	1075	1358	1173	1093	1101	1243	1089	1035	1222
P_1	811	984	1342	1336	1017	983	1123	974	1039	1045
P_2	844	1149	1285	1079	999	1200	1087	1064	1126	1092
Mean	863	1069	1328	1129	1036	1095	1151	1042	1067	1087
K_0	837	1241	1381	1227	1040	1187				
K_1	885	947	1294	1050	953	1124				
K_2	872	1019	1309	1111	1115	974				
F_0	870	1141	1376							
F_1	800	1037	1271							
F_2	918	1029	1337							

S.E. of any marginal mean =32.7 lb./ac.
S.E. of body of any table =56.6 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 59(28).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To see the effect of different micro-nutrients on yield and growth of Jowar.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) 20 lb./ac. of N as A/S+G.N.C. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 7.8.1959. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) —. (v) 100 lb./ac. of A/S+100 lb./ac. of Super at sowing. (vi) B.P.—53. (vii) Unirrigated. (viii) 1 weeding and 3 interculturings. (ix) 70.77″. (x) 29.2.1960.

2. TREATMENTS:

Same as in expt. no. 56(13) on page 138.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 18′×30′. (b) 12′×24′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1167 lb./ac. (ii) 168.2 lb./ac. (iii) D effect is highly significant. (iv) Table of mean and differential responses in lb./ac.

Differential responce

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	6.57	—	—	−10.12	23.26	7.10	6.04	22.00	−8.86	−0.58	13.72
Mn	19.81	3.12	36.50	—	—	17.43	22.19	42.64	−3.02	21.80	17.82
Cu	−1.31	−0.78	−1.84	−3.69	1.07	—	—	−0.39	−2.23	48.10	−50.72
Mo	79.59	95.02	64.16	102.42	56.76	80.51	78.67	—	—	137.47	21.71
B	16.30	9.15	23.45	18.29	14.31	65.71	−33.11	74.18	−41.58	—	—

S.E. of mean response =29.8 lb./ac. S.E. of differential response =42.1 lb./ac.

Crop :- Jowar *(Kharif).* **Ref :- Gj. 55(54).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To study the effects of different methods of application of A/S on the yield of *Kharif* Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 26.7.1955. (iv) (a) N.A. (b) Drilling. (c) 6 lb./ac. (d) Rows—18″ apart. (e) N.A. (v) 5 C.L./ac. of F.Y.M. and 20 lb./ac. of P_2O_5. (vi) Local. (vii) Unirrigated. (viii) 2 interculturings. (ix) 27.20″. (x) 7.12.1955.

2. TREATMENTS to 3. DESIGN ;

Same as in expt. no. 56(20) on page 140.

4. GENERAL:

(i) The germination and stand was fairly satisfactory but the yield was little effected for want of rain. (ii) Nil. Damage due to seasonal abnormalities of about 5%. (iii) Grain and fodder yield. (iv) (a) 1955 to 1956. (b) No. (c) Nil. (v) (a) Deesa and Surat. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 369 lb./ac. (ii) 116.5 lb./ac. (iii) The treatments differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	376	447	274	468	278

S.E./mean =52.1 lb./ac.

Crop :- Jowar *(Kharif).* **Ref :- Gj. 56(65).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To study the effects of different methods of application of A/S on the yield of *Kharif* Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 22.7.1956. (iv) (a) N.A. (b) Drilling. (c) 6 lb./ac. (d) Rows—18″ apart. (e) N.A. (v) 5 C.L./ac. of F.Y.M. and 20 lb./ac. of P_2O_5. (vi) *Jowar* local. (vii) Unirrigated. (viii) Two intercultures and two weedings. (ix) 32.06″. (x) 18.12.1956.

2. TREATMENTS : to 3. DESIGN :

Same as in expt. no. 56(20) on page 140.

4. GENERAL :

(i) The germintion was defective. The stand was gappy and slight attack of stemborer. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—1956. (b) No. (c) N.A. (v) (a) Deesa and Surat. (b) N.A. (vi) Damage due to seasonal abnormality of about 10 %. (vii) Nil.

5. RESULTS :

(i) 881 lb./ac. (ii) 161.7 lb./ac. (iii) The treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	2	4	5
Av. yield	909	832	998	865	803

S.E./mean =72.30 lb./ac.

Crop :- Jowar *(Kharif).* **Ref :- Gj. 57(MAE).**

Site :- M.A.E. Farm, Umrala. **Type -: 'M'.**

Object :—Type II—To study the effect of organic and inorganic manures on the yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Wheat. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 1st and 2nd week of July, 1957. (iv) (a) Two ploughings with country plough followed by two harrowings. (b) Drilling with indigenous drill. (c) 6 lb./ac. (d) 18′×12′. (e) —. (v) Nil. (vi) Local (85-95 days). (vii) Unirrigated. (viii) One weeding and interculture. (ix) 23″. (x) 1st and 2nd week of October, 1957.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=5000$ lb./ac.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
(3) 3 levels of K_2O as Mur. of Pot. : $K_0=0$, $K_1=20$ and $K_2=40$ lb./ac.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 2 main-plots/replication ; 3 blocks/main-plot and 9 sub-plots/block. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 1/151.25 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment during 1956-57 not laid out according to plan while during 1959-60, it is completely vitiated due to rainfall.

5. RESULTS :

(i) 837 lb./ac. (ii) (a) 87.0 lb./ac. (b) 125.2 lb./ac. (iii) N and P effects are highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	709	872	826	653	820	933	806	758	842	802
F_1	773	842	999	747	922	945	867	870	878	871
Mean	741	857	912	700	871	939	836	814	860	837
K_0	666	934	908	625	934	948				
K_1	728	813	901	736	835	871				
K_2	829	824	928	739	844	997				
P_0	613	720	767							
P_1	802	881	931							
P_2	808	971	1038							

S.E. of difference of two

1.	F marginal means	=23.7 lb./ac.
2.	N, P or K marginal means	=41.7 lb./ac.
3.	N, P or K means at the same level of F	=59.0 lb./ac.
4.	F means at the same level of N, P or K	=53.7 lb./ac.
5.	Means in the body of N×P, N×K or P×K tables	=72.3 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 57(23).**
Site :- Agri. Res. Stn., Halvad. **Type :- 'MV'.**

Object :—To find out the best combination of different varieties of manures for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 1.7.1957. (iv) (a) Harrowings. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculturing and weedings. (ix) 15.09″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of manuring : M_0=No manure and M_1=200 lb./ac. of manure mixture.

Sub-plot treatments :

3 varieties : V_1=Local, V_2=E—56—A and V_3=S—231.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) Two rows on each side. (vi) Yes.

4. GENERAL :

(i) The crop was of average type. V_3, being a late variety, suffered heavy loss due to lack of moisture. (ii) Light attack of long smut. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 112 lb./ac. (ii) (a) 13.87 lb./ac. (b) 34.59 lb./ac. (iii) M effect is significant, V effect is highly significant while interaction is not significant. (iv) (a) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	Mean
M_0	138	154	7	100
M_1	145	182	44	124
Mean	142	168	26	112

S.E. of difference of two

1.	M marginal means	= 5.66 lb./ac.
2.	V marginal means	=17.30 lb./ac.
3.	V means at the same level of M	=24.46 lb./ac.
4.	M means at the same level of V	=20.75 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 57(85).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'MV'.**

Object :—To study the effect of manures on the performance of different varieties of Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 20 lb./ac. of N as A/S. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 28.6.1957. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 1 thinning and 1 interculturing. (ix) 34″. (x) 16.10.1957.

2. TREATMENTS :

Main-plot treatments :

2 levels of N : N_0=0 and N_1=10 lb./ac.

Sub-plot treatments :

3 varieties : V_1=S—231 (late), V_2=E—56—A (early) and V_3=Local (early).

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 51′×12′. (b) 45′×9′. (v) 3′×1½′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—1957. (b) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 249 lb./ac. (ii) (a) 21.51 lb./ac. (b) 33.91 lb./ac. (iii) N and V effects are highly significant. Interaction N×V is significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	Mean
N_0	102	260	288	217
N_1	129	380	331	280
Mean	116	320	310	249

S.E. of difference of two

1. N marginal means = 8.78 lb./ac.
2. V marginal means =16.96 lb./ac.
3. V means at the same level of N =23.98 lb./ac.
4. N means at the same level of V =21.51 lb./ac.

Crop :- Jowar ***(Kharif).*** **Ref :- Gj. 56(105).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'MV'.**

Object :—To study the effect of N on different varieties of Jowar.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 7.7.1956. (iv) (a) One harrowing. (b) Drilling. (c) 6 lb./ac. (d) 18″ between rows. (e)—. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding. (ix) and (x) N.A.

2. TREATMENTS:

Main-plot treatments :

3 varieties : V_1=S—231, V_2=E—56—A and V_3=Local.

Sub-plot treatments :

2 levels of N as A/S : N_0=0 and N_1=10 lb./ac. applied at sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 51′×12′. (b) 45′×9′. (v) 3′×1.5′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) N.A (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 240 lb./ac. (ii) (a) 66.15 lb./ac. (b) 150.8 lb./ac. (iii) Only V effect is highly significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	Mean
N_0	136	255	185	192
N_1	145	390	329	288
Mean	140	322	257	240

S.E. of difference of two

1. V marginal means = 33.08 lb./ac.
2. N marginal means = 61.56 lb./ac.
3. N means at the same level of V =106.63 lb./ac.
4. V means at the same level of N =111.64 lb./ac.

Crop :- Jowar *(Rabi)*. **Ref :- Gj. 54(18).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'C'.**

Object :—To find out suitable spacing and seed rate for *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat—*Jowar* (*Rabi*). (b) Wheat. (c) Nil. (ii) (a) Black soil. (b) N.A. (iii) 14.10.1954. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) Between rows—according to treatments and irregular between plants. (e) N.A. (v) Nil. (vi) *Jowar* No. 8. (vii) Unirrigated. (viii) Thinning on 11.11.1954. and interculturing on 10.12.1954. (ix) 8.28″. (x) 10.3.1955.

2. TREATMENTS :

Main-plot treatments :

3 spacing between rows : $S_1=2'$, $S_2=3'$ and $S_3=2'$ and 3′ alternately.

Sub-plot treatments :

3 seed rates : $R_1=6$, $R_2=8$ and $R_3=10$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 27′×38′. 27′×42′ and 27′×40′ for S_1, S_2 and S_3 respectively. (b) 17′×30′. (v) Two rows on either side and 5′ at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and chaff yield. (iv) (a) 1952—1954. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 944 lb./ac. (ii) (a) 153.1 lb./ac. (b) 115.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	916	976	956	949
R_2	895	915	918	909
R_3	984	985	952	974
Mean	932	959	942	944

S.E. of difference of two

1. S marginal means =51.03 lb./ac.
2. R marginal means =38.47 lb./ac.
3. R means at the same level of S =66.62 lb./ac.
4. S means at the same level of R =74.58 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 55(20).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To study the suitability of departmental and local methods of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Coarse sandy loam. (b) Refer soil analysis, Deesa. (iii) 22.8.1956. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) Between rows—as per treatments and irregular between plants. (e) N.A. (v) Nil. (vi) *Malvan*. (vii) Unirrigated. (viii) 1 interculturing on 16.9.1955 and 3 weedings on 14, 15.9.1955 and 5.10.1955. (ix) 15.65″. (x) 17.11.1955.

2. TREATMENTS:

(1) Departmental method : Spacing between rows 15″+seed rate at 4 lb./ac.
(2) Local method : Spacing between rows 12″+seed rate at 16 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42.5′×20′, 42′—5″×19′ for treatments 1 and 2 respectively. (b) 36′—3″×15′. (v) 3′—1½″ on lengthwise and 4 rows breadthwise. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 184 lb./ac. (ii) 100.8 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	187	181

S.E./mean =29.1 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 56(19).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To study the suitability of departmental and local methods of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) Nil. (ii) (a) Coarse sandy loam. (b) Refer soil analysis, Deesa. (iii) 22.8.1956. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) Between rows—as per treatments ; between plants—irregular. (e) N.A. (v) Nil. (vi) *Malvan*, (local). (vii) Unirrigated. (viii) One weeding on 28.9.1956 and 1 interculturing on 27.9.1956. (ix) 35.39″. (x) 25.11.1956.

2. TREATMENTS :

Same as in expt. no. 55(20) on page 153.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42′-5″×20′, 42′-5″×19′ for treatments 1 and 2 respectively. (b) 36′-3″×15′. (v) 3′-1½″ lengthwise and 4 rows breadthwise. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) There was some attack of birds. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) No. (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 468 lb./ac. (ii) 65.5 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	583	353

S.E./mean =18.9 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 57(18).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To study the suitability of departmental and local methods of cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Yellowish and brown. (b) Refer soil analysis, Deesa. (iii) 24.7.1957. (iv) (a) One ploughing on 17.7.1957. (b) Drilling. (c) As per treatments. (d) Between rows—as per treatments and irregular between plants. (e) N.A. (v) 3 C.L./ac. of F.Y.M. spread by hand on 1.7.1957. (vi) *Malvan* (local). (vii) Unirrigated. (viii) Interculturing—7.9.1957. (ix) 14.57″. (x) 10, 13.12.1957.

2. TREATMENTS :

Same as in expt. no. 55 (20) on page 153.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42′—5″×20′ and 42.5′×19′ for treatments 1 and 2 respectively. (b) 36′—3″×15′ (v) 3′—1½″ length wise and 4 rows breadthwise. (vi) Yes.

4. GENERAL :

(i) The germination was defective and gap filling had to be followed. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 150 lb./ac. (ii) 83.1 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	247	54

S.E./mean =24.0 lb./ac.

* * *

Crop :- Jowar ***(Kharif)*****.** **Ref :- Gj. 56(24).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out a suitable date of sowing for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Two harrowings. (b) Drilling. (c) 12 lb./ac. (d) 18″ between rows. (e)—. (v) 200 lb./ac. of manure mixture broadcast before sowing. (vi) Local. (vii) Irrigated(viii) Nil. (ix) 33.75″. (x) for D_1 27.9.1956 for D_2 3.10.1956 for D_3, D_4 and D_5 respectively 13.10.1956.

2. TREATMENTS :

5 sowing dates : D_1=15.6.1956, D_2=22.6.1956, D_3=29.6.1956, D_4=6.7.1956 and D_5=13.7.1956.
Treatment D_3 was dropped due to continuous rain. Also sowing of D_4 was postponed to 10.7.1956.
Expt. analysed as R.B.D.

3. DESIGN :

(i) L. Sq. (ii) (a) 5 (4 effective treatments) (b) N.A. (iii) 5. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 299 lb./ac. (ii) 101.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4
Av. yield	472	458	140	126

S.E./mean =45.15 lb./ac.

* * *

Crop :- Jowar ***(Kharif)*****.** **Ref :- Gj. 58(17).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out a suitable date of sowing for Jowar.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 12 lb./ac. (d) 18″×4″. (e) N.A. (v) 10 C.L./ac. of compost + 200 lb./ac. of manure mixture before sowing. (vi) E—56—A. (vii) Irrigated. (viii) 2 weedings and 1 interculturing. (ix) 13″. (x) 30.9.1958 to 30.10.1958.

2. TREATMENTS :

5 dates of sowing : D_1=15.6.1958, D_2=22.6.1958, D_3=29.6.1958, D_4=6.7.1958 and D_5=13.7.1958.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40′×14′. (b) 34′×7½′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of shoot borers. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Expt. analysed as R.B.D. as layout plan was not available.

5. RESULTS :

(i) 262.4 lb./ac. (ii) 73.62 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	266	272	332	238	204

S.E./mean =32.91 lb./ac.

Crop :- Jowar ***(Kharif).*** **Ref :- Gj. 54(64).**
Site :- Agri. Res. Stn., Surat. **Type :- 'C'.**

Object :—To find out suitable sowing time for Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 8 lb./ac. (d) 3′×1′. (e) N.A. (v) Nil. (vi) B.P.-53. (vii) Irrigated. (viii) 1 thinning, 1 weeding and 2 interculturings. (ix) 37.5″. (x) 16.2.1955.

2. TREATMENTS :

3 sowing dates : D_1=20.8.1954, D_2=27.8.1954 and D_3=16.9.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 100′×21′. (b) 88′×15′. (v) 2 rows on either side and 3′ at either end. (vl) Yes.

4. GENERAL :

(i) Normal. (ii) Borer attack observed. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 858.7 lb./ac. (ii) 54.3 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3
Av. yield	865	885	826

S.E./mean =27.15 lb./ac.

Crop :- Jowar ***(Kharif).*** **Ref :- Gj. 55(46).**
Site :- Agri. Res. Stn., Surat. **Type :- 'C'.**

Object :—To find out suitable sowing time for Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar* after cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) 3′×1′. (e) N.A. (v) Nil. (vi) *Jowar* B.P.—53. (vii) Unirrigated. (vii) 2 thinnings, 3 interculturings and 1 weeding. (ix) 27″. (x) 1.1.1956.

2. TREATMENTS :

3 dates of sowing : D_1=28.7.1955, D_2=4.8.1955 and D_3=12.8.1955.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 21′×100′. (b) 15′×88′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of borer. (iii) Grain and fodder yield. (iv) (a) 1953—55. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 361.7 lb./ac. (ii) 32.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatments	D_1	D_2	D_3
Av. yield	373	365	347

S.E./mean =16.1 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 56(54).**

Site :- Agri. Res. Stn., Surat. **Type :- 'C'.**

Object :—To find out suitable sowing time for Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) As per treatments. (iv) (a) N.A. (b) N.A. (c) 8 lb./ac. (d) 3′×1′. (e) N.A. (v) Nil. (vi) B.P.—53. (vii) Irrigated. (viii) 3 thinnings and 3 interculturings. (ix) 41.74″. (x) 5.2.1957.

2. TREATMENTS :

3 sowing dates : D_1=18.8.1956, D_2=26.8.1956 and D_3=6.9.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 100′×21′. (b) 88′×15′. (v) 2 rows on either side and 3′ at either end. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Borer attack. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 635 lb./ac. (ii) 59.76 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3
Av. yield	659	624	621

S.E./mean =29.88 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 56(58).**

Site :- Agri. Res. Stn., Surat. **Type :- 'C'.**

Object :—To find the effect of different spacings and number of plants per hill on yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar* (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 17.8.1956. (iv) (a) N.A. (b) Dibbling. (c) 8 lb./ac. (d) and (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. on 6.6.1956. (vi) B.P.-53. (vii) Unirrigated. (viii) 1 thinning, 1 weeding and 3 interculturings and once gap filling on 5.9.1956. (ix) 41.74″. (x) 31.1.1957.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : $S_1=24''\times24''$, $S_2=30''\times24''$ and $S_3=36''\times12''$.
(2) No. of plants/hill :H_1=one, H_2=a cluster of plants.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) For S_1—$72'\times38'$, for S_2—$72'\times40'$ and S_3—$72'\times42'$. (b) $66'\times30'$. (v) $6'\times4'$, $6'\times5'$ and $6'\times6'$ for S_1, S_2 and S_3 respectively. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. GENERAL :

(i) 1031 lb./ac. (ii) 157.0 lbac./. (iii) Main effect of H alone is significant. (iv) Av. yield of grain in lb./ac.

	H_1	H_2	Mean
S_1	1104	998	1051
S_2	1276	780	1028
S_3	1158	871	1015
Mean	1179	883	1031

S.E of marginal mean of S	= 78.5 lb./ac.
S.E. of marginal mean of H	= 64.1 lb./ac.
S.E. of body of table	=111.0 lb./ac.

Crop :- Jowar ***(Kharif)*****.** **Ref :- Gj. 57(67).**
Site :- Agri. Res. Stn., Surat. **Type :- 'C'.**

Object :—To find the effect of different spacings and number of plants per hill on yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar* (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 17.8.1957. (iv) (a) 1 ploughing. (b) Dibbling. (c) 8 lb./ac. (d) and (e) As per treatments (v) 3 C.L /ac. of F.Y.M. in June 1957. (vi) B.P.-53. (vii) Unirrigated. (vii) 1 thinning and 1 weeding. (ix) 33.41″. (x) 11.2.1958.

2. TREATMENTS :

Same as in expt. no. 56(58) on page 157.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) $72'\times240'$. (iii) 2. (iv) (a) For S_1—$72'\times38$, for S_2—$72'\times40'$ and for S_3—$72'\times42'$. (b) $60'\times30'$. (v) $6'\times4'$, $6'\times5'$ and $6'\times6'$ for S_1, S_2 and S_3 respectively. (vi) Yes.

4. GENERAL .

(i) Below normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 552 lb./ac. (ii) 142.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	H_1	H_2	Mean
S_1	811	466	639
S_2	557	599	578
S_3	478	399	439
Mean	615	488	552

S.E. of marginal mean of S = 71.2 lb./ac.
S.E. of marginal mean of H = 58.1 lb./ac.
S.E. of body of table =100.6 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(49)**
Site :- Agri. Res. Stn., Surat. **Type :- 'C'.**

Object:—To find the effect of different spacings and number of plants per hill on yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 7.8.1958. (iv) (a) Nil. (b) Dibbling. (c) 6 to 8 lb./ac. (d) and (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. on 7.8.1958. (vi) B.P.—53. (vii) Unirrigated. (viii) 2 thinnings, 3 intercultures and 2 weedings. (ix) 44.81″. (x) 27.2.1959.

2. TREATMENTS :

Same as in expt. no. 56(58) on page 157.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 72′×240′. (iii) 2. (iv) (a) For S_1—72′×38′, for S_2—72′×40′ and for S_3—72′×42′. (b) 60′×30′. (v) 6′×4′, 6′×5′ and 6′×6′ for S_1, S_2 and S_3 respectively. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 730 lb./ac. (ii) 138.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	H_1	H_2	Mean
S_1	729	685	707
S_2	735	794	765
S_3	962	474	718
Mean	809	651	730

S.E. of marginal mean of S =69.24 lb./ac.
S.E. of marginal mean of H =56.54 lb./ac.
S.E. of body of table =97.93 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 59(27).**
Site :- Agri. Res. Stn., Surat. **Type :- 'C'.**

Object :—To find the effect of different spacings and number of plants per hill on yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 12.8.1959. (iv) (a) Nil. (b) Dibbling. (c) 6 to 8 lb./ac. (d) and (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.-53. (vii) Unirrigated. (viii) 2 thinnings, 2 weedings and 3 intercultures. (ix) 70.77". (x) Mid-Feb. 1960.

2. TREATMENTS :

Same as in expt. no. 56(58) on page 157.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 72'×240'. (iii) 2. (iv) For S_1—72'×38', S_2—72'×40' and for S_3—72'×42'. (b) 60'×30'. (v) 6'×4', 6'×5' and 6'×6' for S_1, S_2 and S_3 respectively. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 863 lb./ac. (ii) 89.73 lb./ac. (iii) Main effect of H alone is significant. (iv) Av. yield of grain in lb./ac.

	H_1	H_2	Mean
S_1	912	820	866
S_2	959	821	890
S_3	936	729	832
Mean	936	790	863

S.E. of marginal mean of S =44.86 lb./ac.
S.E. of marginal mean of H =36.64 lb./ac.
S.E. of body of table =63.46 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 56(104).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To find the optimum time of sowing for Jowar.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) Nil. (b) Drilling. (c) 6 lb./ac. (d) 18" between rows, (e) —. (v) 10 lb./ac. of N as manure mixture on 10.9.1956. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) and (x) N.A.

2. TREATMENTS :

7 dates of sowing : D_1=15th June, D_2=22nd June, D_3=29th June, D_4=6th July, D_5=13th July, D_6=20th July and D_7=27th July, 1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) 24'×36'. (b) 18'×30'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Heavy attack of top-shoot borer and aphids. Nicotine sulphate was sprayed. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Yields are very low. Reasons N.A.

5. RESULTS :

(i) 54.85 lb./ac. (ii) 35.70 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6	D_7
Av. yield	34.04	69.70	68.41	79.05	102.61	17.75	12.42

S.E./mean =15.96 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 57(86).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To find out the optimum time of sowing for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 20 lb./ac. of N as A/S. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) One tractor ploughing and two harrowings. (b) to (e) N.A. (v) 20 lb./ac. of N as manure mixture. (vi) *Jowar* (local, early.) (vii) Unirrigated. (viii) Thinning on 19.7.1956, weeding on 25.7.1957 and interculturing on 14.8.1957. (ix) 34". (x) 8.10.1957.

2. TREATMENTS :

7 dates of sowing : D_1=15th June, D_2=22nd June, D_3=29th June, D_4=6th July, D_5=13th July, D_6= 20th July and D_7=27th July, 1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) 36'×24'. (b) 30'×18'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Ht. of plants, length of ear, wt. of ear and wt. of grain/ear. Grain and fodder yield. (iv) (a) 1956 to 57. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 307 lb./ac. (ii) 57.18 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6	D_7
Av. yield	312	429	531	431	267	124	57

S.E./mean =25.56 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(120).**

Site :- Agri. Res. Stn., Bhachau. **Type :- 'CM'.**

Object :—To find out a suitable combination of spacing, seed rate and fertilizer for Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Wheat or Groundnut. (b) N.A. (c) N.A. (ii) (a) Sandy. (b) Refer soil analysis, Bhachau. (iii) 15.7.1958. (iv) (a) One ploughing and one harrowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) E—56 A (early). (vii) Unirrigated. (viii) 2 interculturings. (ix) 25.62". (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 spacings between rows : S_1=18", S_2=36" and S_3=54".
(2) 3 seed rates : R_1=5, R_2=10 and R_3=15 lb./ac.
(3) 3 doses of fertilizers : M_0=0, M_1=20 lb./ac. of N+10 lb./ac. of P_2O_5 and M_2=40 lb./ac. of N+20 lb./ac. of P_2O_5.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) One. (iv) (a) 50'×18'. (b) 45'×12'. (v) 2.5'×3'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) As the plan of the expt. was N.A., the expt. was analysed as simple factorial.

5. RESULTS :

(i) 288 lb./ac. (ii) 90.02 lb./ac. (iii) Only S effect is highly significant. Other effects and interactions are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	344	218	156	239	222	309	187
R_2	483	262	220	322	274	333	358
R_3	399	273	235	302	220	395	292
Mean	409	251	204	288	239	346	279
M_0	328	218	171				
M_1	481	310	246				
M_2	417	224	195				

S.E. of any marginal mean =30.01 lb./ac.
S.E. of body of any table =51.97 lb./ac.

Crop :- Jowar *(Rabi)*. **Ref :- Gj. 59(118).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'CM'.**

Object :—To study the effect of improved method of cultivation on the yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Black. (b) Refer soil analysis, Dabhoi. (iii) 28.10.1958. (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 18″ between rows. (e) —. (v) Nil. (vi) *Jowar* B.D.-8. (vii) Irrigated. (viii) One interculturing on 8.12.1959. (ix) N.A. (x) 25.3.1959.

2. TREATMENTS :

(1) **Improved Method :** 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super.
(2) **Local Method :** 5 C.L./ac. of F.Y.M.+Seed rate at 10 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 40′×36′. (b) 35′×30′. (v) 2.5′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) —.

5. RESULTS :

(i) 135.5 lb./ac. (ii) 56.09 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	157	114

S.E./mean =22.90 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(11).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'CM'.**

Object :—To find out whether departmental method of cultivation is superior to local method.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Castor. (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Deesa. (iii) 25.8.1958. (iv) (a) 3 ploughings and 2 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 3 C.L./ac. of F.Y.M. (vi) Malvan (Local). (vii) Unirrigated. (viii) 2 interculturings. (ix) 14.1". (x) 16.12.1958.

2. TREATMENTS :

Method of cultivation

	Seed rate	Spacing	N as A/S	P_2O_5	F.Y.M.
1. Departmental	4 lb./ac.	24″	20 lb./ac.	20 lb./ac.	3 C.L./ac.
2. Local	16 lb./ac.	12″	Nil.	Nil	3 C.L./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) 120′×42½′. (iii) 12. (iv) (a) 20′×42¼′. (b) 15′×36¼′. (v) 2.5′×3′. (vi) Yes.

4. GENERAL .

(i) Not satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 468.7 lb./ac. (ii) 114.0 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	572	365

S.E./mean =32.90 lb./ac.

* * *

Crop :- Jowar. **Ref :- Gj. 58(75).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object:—To find out a suitable combination of spacing, seed rate and fertilizer for Jowar.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black with poor fertility. (b) Refer soil analysis, Halvad. (iii) 9.7.1958. (iv) (a) 1 ploughing, 1 harrowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) E—56-A. (vii) Irrigated. (vii) 2 interculturings and 2 weedings. (ix) 13″. (x) 20.10.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 spacings between rows : $S_1=18''$, $S_2=36''$ and $S_3=54''$.
(2) 3 seed rates : $R_1=5$, $R_2=10$ and $R_3=15$ lb./ac.
(3) 3 doses of fertilizers : $M_0=0$, $M_1=20$ lb./ac. of N+10 lb./ac. of P_2O_5 and $M_2=40$ lb./ac of N+ 20 lb./ac. of P_2O_5.

P_2O_5 broadcast before sowing. N applied in two doses : first before sowing and second a month after sowing.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Slight attack of insects and top-shoot borer. (iii) Grain yield. (iv) (a) 1958—contd. (failed in 1959). (b) N.A. (c) No. (v) (a) Junagadh, Umrala and Jamnagar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 589 lb./ac. (ii) 92.81 lb./ac. (iii) Only M effect is highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	665	658	507	610	362	643	824
R_2	617	701	472	596	325	633	831
R_3	609	572	503	562	283	565	837
Mean	630	644	494	589	323	614	831
M_0	309	385	277				
M_1	689	643	508				
M_2	892	902	698				

S.E. of any marginal mean =21.88 lb./ac.
S.E. of body of any table =37.89 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(90).**

Site :- Agri. Res. Stn., Jamnagar. **Type :- 'CM'.**

Object :—To find out a suitable combination of spacing, seed rate and fertilizer for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 25.6.1958. (iv) (a) N.A. (b) Drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) E-56-A. (vii) Unirrigated. (viii) N.A. (ix) 28.42". (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 spacing between rows : S_1=18", S_2=36" and S_3=54".
(2) 3 seed rates : R_1=5, R_2=10 and R_3=15 lb./ac.
(3) 3 doses of fertilizers : M_0=0, M_1=20 lb./ac. of N +10 lb./ac. of P_2O_5 and M_2=40 lb./ac. of N +20 lb./ac. of P_2O_5.

N as A/S broadcast and P_2O_5 as Super drilled.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) 40'×18'. (b) 34'×9'. (v) 3'×4.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1958—N.A. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 288 lb./ac. (ii) 73.17 lb./ac. (iii) Only M effect is highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	297	267	275	280	265	269	305
R_2	337	274	265	292	249	323	303
R_3	280	325	268	291	222	312	340
Mean	305	289	269	288	245	301	316
M_0	225	263	248				
M_1	328	298	278				
M_2	360	305	282				

S.E. of any marginal mean =17.25 lb./ac.
S.E. of body of any table =29.88 lb./ac.

Crop :- Jowar. **Ref :- Gj. 58(81).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'**

Object :—To find out a suitable combination of spacing, seed rate and fertilizer for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 4.7.1958. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) S-213. (vii) Unirrigated. (viii) N.A. (ix) 38.72". (v) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 3 spacing between rows : $S_1=18''$, $S_2=36''$ and $S_3=54''$.
(2) 3 seed rates : $R_1=5$, $R_2=10$ and $R_3=15$ lb./ac.
(3) 3 doses of fertilizers : $M_0=0$, $M_1=20$ lb./ac. of N+10 lb/ac. of P_2O_5 and $M_2=40$ lb./ac. of N+20 lb./ac. of P_2O_5.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40'×18'. (b) 34'×9'. (v) 3'×4.5'. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1958—contd. (b) N.A. (c) No. (v) (a) and (b) Nil. (vi) and (vii) N.A.

5. RESULTS :

(i) 867 lb./ac. (ii) 141.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	1019	904	821	914	887	929	926
R_2	805	860	968	877	913	870	849
R_3	844	816	769	810	765	805	859
Mean	889	860	853	867	855	868	878
M_0	935	854	776				
M_1	857	839	907				
M_2	875	887	874				

S.E. of any marginal mean =33.29 lb./ac.
S.E. of body of any table =57.66 lb./ac.

Crop :- Jowar. **Ref :- Gj. 59(73).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'.**

Object :—To find out a suitable combination of spacing, seed rate and fertilizer for Jowar.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 30.6.1959. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) (a) Nil. (vi) S-213. (vii) Unirrigated. (viii) N.A. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. no. 58(81) on page 165.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1958—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 663 lb./ac. (ii) 160.1 lb./ac. (iii) S and R effects are significant. Others are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	675	446	601	574	527	603	592
R_2	827	629	657	704	690	713	710
R_3	730	808	592	710	682	773	675
Mean	744	628	617	663	633	696	659
M_0	712	631	555				
M_1	820	624	645				
M_2	699	628	650				

S.E. of any marginal mean = 37.75 lb./ac.
S.E. of body of any table = 65.36 lb./ac.

Crop :- Jowar *(Rabi).* **Ref :- Gj. 59(110).**

Site :- Agri. Res. Stn., Kim. **Type :- 'CM'.**

Object :—To find out a suitable spacing together with application of manurial dose for Jowar.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 24.10.1959. (iv) (a) One harrowing. (b) Dibbling. (c) 8 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Jowar* M-35-1. (vii) Irrigated. (viii) 2 to 3 interculturings. (ix) N.A. (x) 31.3.1960.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 3 spacings between rows : $S_1=2'$, $S_2=3'$ and $S_3=4'$.
(2) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac. of N.
(3) 3 levels of P_2O_5 : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac. of P_2O_5.

3. DESIGN :

(i) 3^3 confd. (NP^2S^2 and NPS^2 confd.) (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 36′×24′. (b) 30′×12′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer. (iii) Grain and fodder yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 845 lb./ac. (ii) 130.6 lb./ac. (iii) Only N effect is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	S_0	S_1	S_2
P_0	769	810	861	813	808	859	773
P_1	778	899	860	846	896	811	830
P_2	717	924	983	875	943	878	803
Mean	755	878	901	845	883	849	802
S_0	740	944	964				
S_1	771	890	887				
S_2	754	799	854				

S.E. of any marginal mean =30.78 lb./ac.
S.E. of body of any table =53.32 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 55(49).**
Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find out a suitable method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 31.7.1955. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. for local and 4 lb./ac. for departmental methods. (d) 3′×1′. (e) N.A. (v) P_2O_5 applied on 25.7.1955. (vi) *Jowar* P.B.-53. (vii) Unirrigated. (viii) 3 Interculturings, 1 weeding and 1 thinning. (ix) 27″. (x) 27.1.1956.

2. TREATMENTS:

1. Local method.
2. Departmental method

40 lb./ac. of N as A/S in two equal doses, one at the time of sowing and the other 3 weeks thereafter applied under departmental method.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 30′×42′. (b) 18×30′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) Irregular rainfall caused gaps in growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 949 lb./ac. (ii) 83.93 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	782	1116

S.E./mean =24.2 lb./ac.

Crop :- Jowar. **Ref :- Gj. 56(57).**
Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find out the suitable method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 16.8.1956. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. for local, 4 lb./ac. for departmental. (d) 3′×1′. (e) N.A. (v) As per treatments. (vi) *Budh perio.* (vii) Unirrigated. (viii) 1 thinning and 3 interculturings. (ix) 41.8″. (x) 12.1.1957.

2. TREATMENTS :

1. Local : No manure.
2. Departmental : 20 lb./ac. of N at sowing and 20 lb./ac. of N three weeks later. 20 lb./ac. of P_2O_5 as Super before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42′×24′. (b) 36′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) N.A. (b) No. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2448 lb./ac. (ii) 302.8 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	2227	2669

S.E./mean =87.4 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 57(65).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find out suitable method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 30.7.1957. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Jowar* B.P.—53. (vii) Irrigated. (viii) 3 interculturings, 1 weeding and 1 thinning. (ix) 33.41″. (x) 2.2.1958.

2. TREATMENTS :

Same as in expt. no. 56(57) on page 167.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 30′×42′. (b) 18′×30′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) Growth was checked till end of Oct. for want of moisture. After irrigation the growth reached normalcy. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 950 lb./ac. (ii) 76.21 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	945	954

S.E./mean =22.0 lb./ac.

Crop :- Jowar *(Kharif).* **Ref :- Gj. 58 (48).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find out a suitable method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 20 lb./ac. of N as A/S. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 4.8.1958. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Jowar* B.P.-53. (vii) Unirrigated. (viii) Twice gap filling, 1 thinning and 4 interculturings. (ix) 44.81″. (x) 27.2.1959.

2. TREATMENTS :

Same as in expt. no. 56(57) on page 167.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 30′×42′. (b) 18′×30′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) Growth normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 417 lb./ac. (ii) 29.07 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	374	460

S.E./mean =8.39 lb./ac.

Crop :- Jowar *(Kharif).* **Ref :- Gj. 56(64).**

Site :- Agri. Res. Stn., Talod. **Type :- 'CM'.**

Object :—To find out a suitable method of cultivation for Jowar.

1. BASAL CONDITIONS:

(i) (a) No. (b) *Moth.* (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 17.7.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) As per treatments. (vi) *Jowar* (local). (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 32.06″. (x) 18.12.1956.

2. TREATMENTS :

1. **Local method :** Basal dose of 5 C.L./ac. of F.Y.M ; seed rate at 6 lbs./ac. ; spacing 12″ between rows.
2. **Departmental method :** Basal dose of 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as A/S in two doses+ 20 lb./ac. of P_2O_5 as Super ; seed rate at 4 lb./ac. ; spacing 24″ between rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 40′×20′. (b) 34′×16′. (v) 3′×2′. (vi) Yes.

4. GENERAL :

(i) The germination was defective as a result of continuous rain. The stand was also gappy. (ii) Slight attack of stem borer. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (failed in 1955). (b) and (c) No. (v) (a) Deesa and Surat. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 995 lb./ac. (ii) 183.2 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	866	1124

S.E./mean =52.9 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(56).**

Site :- Agri. Res. Stn., Talod. **Type :- 'CM'.**

Object :—To find out the suitable method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 5.7.1958. (iv) (a) 1 ploughing, 2 harrowings. (b) N.A. (c) and (d) As per treatments. (e) —. (v) As per treatments. (vi) *Malvan* (local). (vii) Unirrigated. (viii) 3 intercukturings and 2 weedings. (ix) 27.9". (x) 8.12.1958.

2. TREATMENTS :

Same as in expt. no. 56(64) on page 169.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 40'×20'. (b) 34'×16'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of stem borer. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (failed in 1955 and 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 158 lb./ac. (ii) 18.82. lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	128	187

S.E./mean =5.43 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 59(34).**

Site:- Agri. Res. Stn., Talod. **Type :- 'CM'.**

Object :—To find out the suitable method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 4.7.1959. (iv) (a) 1 ploughing; 2 harrowings. (b) N.A. (c) and (d) As per treatments. (e)—. (v) As per treatments. (vi) *Malvan* (Local)—late. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 53.68". (x) 13.11.1959.

2. TREATMENTS :

Same as in expt. no. 56(64) on page 169.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 40'×20'. (b) 34'×16'. (v) 3'×2'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of stem borer. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 215 lb./ac. (ii) 80.31 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	68	363

S.E./mean =23.18 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(103).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To study the effect of different spacings, seed rates and manuring on the yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 17.7.1958. (iv) (a) One ploughing, one harrowing. (b) Hand sowing. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) E. 56-A. (vii) Unirrigated. (viii) One interculturing and one weeding. (ix) N.A. (x) 16.10.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 spacings between rows : $S_1=18''$, $S_2=36''$ and $S_3=54''$.

(2) 3 seed rates : $R_1=5$, $R_2=10$ and $R_3=15$ lb./ac.

(3) 3 doses of fertilizers : $M_0=0$, $M_1=20$ lb./ac. of N+10 lb./ac. of P_2O_5 and $M_2=40$ lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S broadcast at sowing, P_2O_5 as Super drilled after sowing.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 44'×18'. (b) 34'×9'. (v) 5'×4.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 441 lb./ac. (ii) 110.9 lb./ac. (iii) Only S and M. effects are highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	493	404	332	410	324	456	449
R_2	569	367	518	485	382	504	569
R_3	528	381	379	429	327	474	487
Mean	530	384	410	441	344	478	502
M_0	379	310	343				
M_1	578	453	403				
M_2	632	389	483				

S.E. of any marginal mean =26.14 lb./ac.
S.E. of body of any table =45.27 lb./ac.

Crop :- Jowar. **Ref :- Gj. 55(60).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'CM'.**

Object :—To find out the best method of cultivation for Jowar.

1. BASAL CONDITIONS:

(i) (a) No. (b) G.M. crop. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 29.8.1955. (iv) (a) N.A. (b) Seeds drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Malvan*. (vii) Irrigated. (viii) 2 interculturings. (ix) N.A. (x) 24.12.1955.

2. TREATMENTS :

   1. 5 C.L./ac. of F.Y.M. + 40 lb./ac. of N as A/S in 2 doses + 20 lb./ac. of P_2O_5 in single dose ; 24″ spacing between rows + seed rate at 4 lb./ac.
   2. Manuring as in (1) with 18″ spacing and seed rate at 10 lb./ac.
   3. Local method : No manuring with 9″ spacing and seed rate at 25 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 24′×56′ for 9″ and 18″ spacing, 22′×56′ for 24″ spacing. (b) 18′×50′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) The crop was damaged slightly by birds. (iii) Weight of *Jowar* grain and fodder. (iv) (a) 1955—1957. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) The season was characterised by heavy rain which affected adversely the *Kharif* crops in general. (vii) Nil.

5. RESULTS :

(i) 380 lb./ac. (ii) 93.19 lb./ ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield.	384	365	391

S.E./mean =38.05 lb./ac.

Crop :- Jowar ***(Kharif).*** **Ref. :- Gj. 56(71).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'CM.'**

Object :-To find out the best method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 8 C.L./ac. of F.Y.M. (ii) (a) Sandy loam. (b) N.A. (iii) 21.8.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Malvan.* (vii) Irrigated. (viii) N.A. (ix) 41″. (x) 4.12.1956.

2. TREATMENTS :

Same as an expt. no. 55 (60) on page 171.

3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 24′×56′ for 9″ and 18″ spacing and 24′ × 56′ for 24″ spacing. (b) 18′×50′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) The season was characterised by continuous rain. This resulted in excessive vegetative growth of crop which affected the grain yield considerably. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1072 lb./ac. (ii) 258.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	1172	1392	652

S.E./mean =105.4 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 57(94).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'CM'.**

Object :—To find out suitable method of cultivation for Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Tur*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 18.8.1957. (iv) (a) One ploughing, 4 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Malvan*. (vii) Unirrigated. (viii) One interculturing and two weedings. (ix) 17″. (x) 14.11.1957.

2. TREATMENTS :

Same as in expt. no. 55(60) on page 171.
F.Y.M. applied on 29.6.1957, A/S on 12.7.1957 and 15.9.1957 and P_2O_5 on 30.6.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 210′×112′. (iii) 6. (iv) (a) 24′×56′ for 9″ and 18″ spacing and 22′×56′ for 24″ spacing. (b) 18′×50′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Due to want of rain treatment 2 was experiencing shortage of water and so grain development was poor. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—57. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 662 lb./ac. (ii) 224.8 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	582	688	716

S.E./mean =91.8 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 57(MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'CM'.**

Object :—Type VIII—To determine the optimum spacings for Jowar when different doses of N and P_2O_5 are applied.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Wheat. (b) Cotton. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 1st—2nd week of July, 1957. (iv) (a) 2 ploughings with country plough followed by two harrowings before sowing. (b) Drilling. (c) 6 lb./ac. (d) As per treatments. (e) —. (v) 5,000 lb./ac. of F.Y.M. (vi) Local (vii) Irrigated. (viii) One weeding and interculturing. (ix) 23″. (x) 1st—2nd week of October, 1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
(3) 3 spacings : Details—N.A.

3. DESIGN :

(i) 3^3 Fact. confd. (ii) (a) 9 ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 1/84.42 lb./ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Expt. during 1956 was not laid out according to plan.

5. RESULTS :

(i) 487.3 lb./ac. (ii) 121.9 lb./ac. (iii) N and P effects are highly significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	S_1	S_2	S_3
N_0	172.5	319.9	504.8	332.4	341.3	323.6	332.3
N_1	391.4	663.8	603.0	552.7	578.5	520.6	559.1
N_2	536.3	638.4	556.0	576.9	582.2	547.0	601.6
Mean	366.7	540.7	554.6	487.3	500.7	463.7	497.6
S_1	376.2	547.0	578.9				
S_2	357.4	504.5	529.3				
S_3	366.7	570.7	557.4				

S.E. of any marginal mean =40.6 lb./ac.
S.E. of body of any table =70.4 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :-Gj. 58(MAE).**

Site :- M.A.E., Umrala. **Type :- 'CM'.**

Object :—Type VIII—To determine the optimum spacing for Jowar when different doses of N and P_2O_5 are applied.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Wheat. (b) Cotton. (c) N.A. (ii) (a)Medium black soil. (b) N.A. (iii) Early July. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) Local. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) Early October.

2. TREATMENTS :

Same as in expt. no. Gj. 57 (MAE) on *Jowar* crop on page 173.

3. DESIGN :

(i) 3^3 Fact. confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/201.7 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted during 1959-60 completely vitiated due to rainfall.

5. RESULTS :

(i) 642 lb./ac. (ii) 257.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean	S_1	S_2	S_3
N_0	714	746	628	696	695	670	722
N_1	733	577	433	581	649	540	554
N_2	663	510	779	650	727	563	661
Mean	703	611	613	642	690	591	646
S_1	679	693	699				
S_2	651	502	619				
S_3	779	639	522				

S.E. of any marginal mean = 60.7 lb./ac.
S.E. of body of any table =105.2 lb./ac.

Crop :- Jowar *(Rabi)*. **Ref :- Gj. 54(30).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'D'.**

Object :—To see the effect of treating the seed with 2-4-D solutions for Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 23.10.1954. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) Bhatpur. (vii) Irrigated. (viii) 1 interculturing and 1 weeding. (ix) Negligible (*Rabi* Season). (x) 21.3.1955.

2- TREATMENTS :

1. Seed soaked in water for 30 minutes.
2. Seed soaked in 0.01 p.p.m. 2-4-D for 30 minutes.
3. Seed soaked in 0.10 p.p.m. 2-4-D for 30 minutes.
4. Seed soaked in 1.00 p.p.m. 2-4-D for 30 minutes.
5. Seed soaked in water for 5 hours.
6. Seed soaked in 0.01 p.p.m. 2-4-D for 5 hours.
7. Seed soaked in 0.10 p.p.m. 2-4-D for 5 hours.
8. Control (no seed treatment).

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 42′×18′. (b) 36′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1031 lb./ac. (ii) 109.9 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8
Av. yield	1003	987	984	1068	1112	1177	961	953

S.E./mean =54.95 lb./ac.

Crop :- Jowar. **Ref :- Gj. 54(63).**

Site :- Agri. Res. Stn., Surat. **Type :- 'D'.**

Object :—To see the effect of hormone treatment of seeds on the growth and yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 21.8.1954. (iv) (a) 2 harrowings as preparatory tillage. (b) Drilled by hand plough. (c) 10 lb./ac. (d) 3′ between rows and thinning out at one foot distance between plants. (e) N.A. (v) As per treatments. (vi) *Jowar* B.P-53. (vii) Unirrigated. (viii) One weeding, one thinning and two interculturings. (ix) 81.54″. (x) 17.2.1955.

2. TREATMENTS :

All combinations of (1) and (2) +a control.

(1) 2 periods of soaking seeds : T_1=30 minutes and T_2=5 hours.

(2) 7 solutions : C_1=water, C_2=2-4 D in 0.1 concentration, C_3=2-4 D in 1.0 conc., C_4=2-4 D in 10.0 conc., C_5=I.A.A. 1.0 conc., C_6=I.A.A. in 10.0 conc. and C_7=I.A.A. in 100.0 conc.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 42′×18′. (b) 36′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Due to continuous rainfall, *jowar* growth was checked for want of interculturing. (ii) At early stages of growth, 60% of crop was attacked by stem borer. (iii) Periodical height and weight of *kadbi* were taken. (iv) (a) 1952—54. (b) No. (c) No. (v) (a) and (b) N.A. (vi) Season was abnormal. (vii) Nil.

5. RESULTS :

(i) 421.6 lb./ac. (ii) 55.46 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

	C_1	C_2	C_3	C_4	C_5	C_6	C_7	Mean
T_1	436.9	395.8	376.6	434.3	429.0	475.2	394.3	420.3
T_2	378.4	435.1	375.1	422.5	402.1	412.9	483.8	415.7
Mean	407.6	415.4	375.8	428.4	415.6	444.1	439.1	418.0

S.E. of T marginal mean	=10.48 lb./ac.
S.E. of C marginal mean	=19.61 lb./ac.
S.E. of body of table	=27.73 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(115).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 25.6.1957. (iv) (a) One ploughing ; two harrowings. (b) Drilling. (c) 5—6 lb./ac. (d) 36" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Local—early. (vii) Unirrigated. (viii) 3 interculturings ; 2 weedings. (ix) 28.77". (x) 25.10.1957.

2. TREATMENTS :

40 lb./ac. of N in the form of A/S applied as follows :

1. Whole dose broadcast at sowing.
2. Drilled whole dose at sowing.
3. Broadcast ½ dose at sowing+½ dose one month after sowing.
4. Drilled : ½ dose at sowing+½ dose one month after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 24'×27'. (b) 18'×21'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of smut. (iii) Grain and fodder yield. (iv) (a) 1957—59. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 829 lb./ac. (ii) 105.4 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	857	756	857	846

S.E./mean =74.55 lb./ac.

Crop :- Bajra. **Ref :- Gj. 58(96).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) Nil. (b) N.A. (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 2.7.1958. (iv) (a) One harrowing. (b) Hand sowing. (c) 2 lb./ac. (d) 6"×36". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Local—early. (vii) Unirrigated. (viii) 2 interculturings. (ix) 28.76". (x) 19.10.1958.

2. TREATMENTS :

Same as in expt. no. 57(115) on page 176.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 34′×21′. (b) 28′×15′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. .(vi) and (vii) Nil.,

5. RESULTS :

(i) 1293 lb./ac. (ii) 82.24 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	1293	1188	1364	1329

S.E./mean =41.12 lb./ac.

Crop :- Bajra. **Ref :- Gj. 59(95).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 30.6.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 2 lb./ac. (d) 36″×6″. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5. (vi) Local. (vii) Unirrigated. (viii) 2 weedings. (ix) 45.56″. (x) 15.10.1959.

2. TREATMENTS :

Same as in expt. no. 57(115) on page 176.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 34′×21′. (b) 30′×15′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Growth was normal but due to heavy rains at maturity the yield was affected. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—59. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rains in October. (vii) Nil.

5. RESULTS :

(i) 666 lb./ac. (ii) 74.73 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	567	583	785	730

S.E./mean =37.36 lb./ac.

Crop :- Bajra. **Ref :- Gj. 54(9).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To find out the N and P_2O_5 requirements of Bajra.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—wheat—groundnut—cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 5.7.1954. (iv) (a) 3 harrowings. (b) Sowing by drilling. (c) 5 lb./ac. (d) 18″ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. in the month of May. (vi) Mass selected. (vii) Unirrigated. (viii) Weeding and interculturing both thrice. (ix) 25″. (x) 23.10.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=15$, $N_2=30$ and $N_3=45$ lb./ac.

(2) 4 levels of P_2O_5 : $P_0=0$, $P_1=15$, $P_2=30$ and $P_3=45$ lb./ac.

N as A/S broadcast in single dose, P_2O_5 as Super spread in single dose in furrows opened by drill.

3. DESIGN :

(i) 4^2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 39′×21′. (b) 33′×15′. (v) 2 rows on either side of each plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plot wise yield of grain and stalks. (iv) (a) 1951-54. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 636.7 lb./ac. (ii) 98.4 lb./ac. (iii) Main effect of N is highly significant. Main effect of P and interaction N×P are significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	Mean
N_0	595.5	590.0	686.4	838.9	677.7
N_1	518.3	548.7	658.9	738.8	616.2
N_2	512.8	603.7	555.5	795.1	616.8
N_3	519.9	525.4	737.0	761.9	636.0
Mean	536.6	566.9	659.5	783.7	636.7

S.E. of any marginal mean =24.59 lb./ac.
S.E. of body of table =49.19 lb./ac.

Crop :- Bajra. **Ref :- Gj. 56(16).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'M'.**

Object :—To find out a suitable time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Coarse sandy loam. (b) Refer soil analysis, Deesa. (iii) 5.7.1956. (iv) (a) N.A. (b) Drilling with 4-coultered drill. (c) 4 lb./ac. (d) Between rows—12″ and between plants irregular. (e) N.A. (v) 3 C.L./ac. of F.Y.M. broadcast 15 days before sowing. (vi) *Bajra*—207. (vii) Unirrigated. (viii) Weeding on 28.8.1956 and interculturing on 11.8.1956. (ix) 35.39″. (x) 18.10.1956.

2. TREATMENTS:

1. Whole dose broadcast at sowing.
2. ½ dose broadcast at sowing and ½ dose one month after sowing.
3. Whole dose drilled at sowing.
4. ½ dose drilled at sowing+½ dose drilled one month after sowing.
5. Whole dose broadcast 15 days prior to sowing.

Dose applied at 40 lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 36′ ×18′. (b) 30′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) The grain setting was affected to a great extent by the incidence of pest. (ii) Serious attack of cockchopper beetle. The attack was practically even on the entire crop. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS

(i) 201 lb./ac. (ii) 46.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	131	217	197	345	114

S.E./mean =20.7 lb./ac.

Crop :- Bajra **Ref :- Gj. 57(15).**

Site :- Agri. Res., Stn., Deesa. **Type :- 'M'**

Object :—To find out a suitable time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar.* (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Deesa. (iii) 23.7.1957. (iv) (a) One ploughing during February, 1957. (b) Drilling with 4 coultered drill. (c) 4 lb/ac. (d) Between rows—12″ and between plants—irregular. (e) N.A. (v) 3 C.L./ac. of F.Y.M. broadcast 15 days before sowing. (vi) *Bajra*—207. (vii) Unirrigated. (viii) Two harrowings after rains. (ix) 14.57″. (x) 10.10.1957.

2. TREATMENTS :

Same as in expt. no. 56(16) on page 178.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 36′×18′. (b) 30′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Resowing was done on account of the heavy rains after germination. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) and (c) No. (v) (a) Talod. (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 704 lb./ac. (ii) 235.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	864	682	696	772	504

S.E./mean = 105.3 lb./ac.

Crop :- Bajra. **Ref :- Gj. 58(8).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'M'.**

Object :—To find out a suitable time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Bajra—Tur.* (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Deesa. (iii) 18.7.1958. (iv) (a) One ploughing and one harrowing. (b) Drilling. (c) 4 lb./ac. (d) 12″ between rows. (e) N.A. (v) 3 C.L./ac. of F.Y.M. +20 lb./ac. of P_2O_5 as Super. (vi) *Bajra*—207. (vii) Unirrigated. (viii) One interculturing. (ix) 14.13″. (x) 13.10.1958.

2. TREATMENTS :

Same as in expt. no. 56(16) on page 178.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 90′×36′. (iii) 5. (iv) (a) 18′×36′. (b) 12′×30′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1083 lb./ac. (ii) 159.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	1139	1128	1027	1167	955

S.E./mean = 71.40 lb./ac.

Crop :- Bajra. **Ref :- Gj. 56(126).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out a suitable source of N with and without F.Y.M. for Bajra.

1. BASAL CONDITIONS:

(i) (a) Groundnut, *Bajra*—Cotton. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 11.7.1956. (iv) (a) Nil. (b) Drilling. (c) 5 lb./ac. (d) 18″ between rows. (e)N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 26.10.1956.

2. TREATMENTS:

Main-plot treatments:

2 levels of F.Y.M. : F_0=0 and F_1=2000 lb./ac.

Sub-plot treatments :

4 sources of 10 lb./ac. of N : S_0=Control (no nitrogen), S_1=Manure mixture, S_2=A/S, S_3=A.S.N., and S_4=Urea.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Blister attack. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 301 lb./ac. (ii) (a) 149.9 lb./ac. (b) 52.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_0	S_1	S_2	S_3	S_4	Mean
F_0	298	297	313	325	284	303
F_1	252	329	283	316	314	299
Mean	275	313	298	320	299	301

S.E. of difference of two

1. F marginal means	=47.40 lb./ac.
2. S marginal means	=26.30 lb./ac.
3. S means at the same level of F	=37.19 lb./ac.
4. F means at the same level of S	=57.91 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(125).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out a suitable source of N with and without F.Y.M. for Bajra.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Bajra*—Wheat—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 2.7.1957. (iv) (a) Nil. (b) Drilling. (c) 5 lb./ac. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) *Bajra*-28-15. (vii) Unirrigated. (viii) Nil. (ix) 15.09″. (x) 11.10.1957.

2. TREATMENTS :

Same as in expt. no. 56(126) on page 180.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 40′×9′. (b) 36′×6′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 260 lb./ac. (ii) (a) 74.31 lb./ac. (b) 44.04 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_0	S_1	S_2	S_3	S_4	Mean
F_0	266	251	266	231	227	248
F_1	283	266	276	272	270	273
Mean	274	258	271	251	248	260

S.E. of difference of two

1. F marginal means	=19.19 lb./ac.
2. S marginal means	=17.98 lb./ac.
3. S means at the same level of F	=25.42 lb./ac.
4. F means at the same level of S	=29.75 lb./ac.

Crop :- Bajra. **Ref :- Gj. 56(27).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out suitable doses of N and P for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 40 lb./ac. of P_2O_5+40 lb./ac. of N. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 30.6.1956. (iv) (a) 2 harrowings. (b) Drilling. (c) 5 lb./ac. (d) 18″×4″. (e) N.A. (v) Nil. (vi) *Bajra*-28-15. (vii) Nil. (vii) 2 interculturings. (ix) 33.75″. (x) 18.10.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=10$ lb./ac.
(2) 4 levels of P_2O_5 as Super : $P_0=0$, $P_1=4.5$, $P_2=9$ and $P_3=18$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 2. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 266 lb./ac. (ii) 39.99 lb./ac. (iii) Main effect of N is significant. Main effect of P and interaction N×P are not significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	Mean
N_0	186	239	222	237	221
N_1	313	343	300	288	311
Mean	249	291	261	262	266

S.E. of N marginal mean =14.1 lb./ac.
S.E. of P marginal mean =20.0 lb./ac.
S.E. of body of table =28.3 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(29).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out suitable doses of N and P for Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 2.7.1957. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) Nil. (vi) *Bajra*—28—15. (vii) Irrigated. (viii) Thinning, interculturing and weeding. (ix) 15.09″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 56(27) on page 181.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 560 sq. ft. (b) 255 sq. ft. (v) 2 rows on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Ht. of plant, no. of earheads per plant, length of earhead and circumference of earhead. (iv) (a) 1956—contd. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 251 lb./ac. (ii) 45.80 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	Mean
N_0	234	259	211	231	234
N_1	259	269	251	294	268
Mean	247	264	231	263	251

S.E. of marginal mean of N =11.45 lb./ac.
S.E. of marginal mean of P =16.19 lb./ac.
S.E. of body of table =22.90 lb./ac.

Crop :- Bajra. **Ref :- Gj. 59(8).**

Site:- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the response of Bajra to application of micro-nutrients.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) 20 C.L./ac. of compost+50 lb./ac of manure mixture+24 lb./ac. of A/S+180 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 12.7.1959. (iv) (a) 1 ploughing, 2 harrowings. (b) Drilling. (c) 7 lb./ac. (d) 18″ between rows. (e)—. (v) 100 lb./ac. of N broadcast and 100 lb./ac. of P_2O_5 drilled before sowing. (vi) *Bajra*—28-15-2. (vii) Unirrigated. (vii) 2 interculturings and 4 weedings. (ix) 34″. (x) 22.10.1959.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

1. 2 levels of Zinc as $ZnSO_4$: $A_0=0$ and $A_1=Zn\ SO_4$ at 9 lbs.+Lime at 2 lbs.+100 gallons of water.
2. 2 levels of Manganese as $MnSO_4$: $B_0=0$ and $B_1=MnSO_4$ at 3 lbs.+Lime at 2 lbs.+100 gallons of water.
3. 2 levels of Copper as $CuSO_4$: $C_0=0$ and $C_1=CuSO_4$ at 8 lb./ac.+Lime at 8 lbs.+100 gallons of water.
4. 2 levels of Molybdenum as Sodium Molybdate+$CaCO_3$: $D_0=0$ and D_1=Sodium Molybdate at 3 ozs.+100 gallons of water.
5. 2 levels of Boron as Borax : $E_0=0$ and E_1=Borax at 2 lbs.+Bentonite at 0.5 lb.+100 gallons of water.

Total quantity of foliar spray is not available.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 3. (iv) (a) 30′×18′. (b) 24′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Less yield due to rain. (ii) Slight attack of stem borer No control measures adopted. (iii) Grain yield. (iv) (a) 1959—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 546.5 lb./ac. (ii) 361.1 lb./ac. (iii) None of the effects is significant. (iv) Table of mean and differential responses of grain yield in lb./ac.

	Mean response	Differential response									
		A		B		C		D		E	
		−	+	−	+	−	+	−	+	−	+
A	−27.35	—	—	−64.47	9.77	−37.50	−17.20	19.47	−74.17	−62.39	7.69
B	−30.12	−67.24	7.00	—	—	36.62	−96.86	− 4.60	−55.64	−68.31	8.07
C	31.13	20.98	41.28	97.87	−35.61	—	—	72.53	−10.27	−14.12	76.38
D	6.05	52.87	−40.77	31.57	−19.47	47.45	−35.35	—	—	−21.17	33.27
E	2.08	−32.96	37.12	−36.11	40.27	−43.17	47.33	−25.14	29.30	—	—

S.E. of mean response = 73.7 lb./ac.
S.E. of differential response =104.2 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(46).**

Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the dose of F.Y.M. required to maintain the fertility of soil as judged from the yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) Nil. (ii) (a) Salty soil. (b) Refer soil analysis, Harij. (iii) 3.7.1957. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 18″×1″. (e)—. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) 8″. (x) 4.10.1957.

.2 TREATMENTS :

4 levels of F.Y.M. : $F_0=0$, $F_1=5$, $F_2=10$ and $F_3=15$ lb./ac.
F.Y.M. spread on 3.7.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 33′×16½′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Stunted growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—contd. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 220 lb./ac. (ii) 76.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	F_0	F_1	F_2	F_3
Av. yield	185	210	255	230

S.E./mean =38.00 lb./ac.

Crop :- Bajra **Ref :- Gj. 58(36).**

Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the dose of F.Y.M. required to maintain the soil fertility as judged from the yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Salty soil. (b) Refer soil analysis, Harij. (iii) 16.7.1958. (iv) (a) 1 harrowing. (b) Drilling. (c) 10 lb./ac. (d) 18″×1″. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 hand weeding. (ix) 13.77″. (x) 25.10.1958.

2. TREATMENTS :

4 levels of F.Y.M. : $F_0=0$, $F_1=5$, $F_2=10$ and $F_3=15$ lb./ac. F.Y.M. spread on 16.7.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 33′×16½′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Very poor. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—contd. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 77 lb./ac. (ii) 22.32 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	F_0	F_1	F_2	F_3
Av. yield	65	75	85	82

S.E./mean =11.16 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 57(54).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To study the methods of application of F.Y.M. and Ammo. Phos. to Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut. (c) N.A. (ii) (a) Medium black, 2′ to 2½′ deep. (b) Refer soil analysis, Junagadh. (iii) 29.6.1957. (iv) (a) 2 to 3 harrowings. (b) Drilling. (c) About 5 lb./ac. (d) 36″×9″. (e) N.A. (v) Nil. (vi) *Balsapuri* (medium to late). (vii) Unirrigated. (viii) Thinning, gap filling, 2 weedings and 2 interculturings. (ix) 30.21″. (x) 26.10.1957.

2. TREATMENTS :

1. Control.
2. F.Y.M. at 5 tons/ac. applied in furrows.
3. F.Y.M. at 5 tons/ac. spread evenly.

4. F.Y.M. at 5 ton/ac. applied at hills.
5. Ammo. Phos. (40 lb./ac. of N+50 lb./ac. of P_2O_5) applied in furrows.
6. Ammo. Phos. (40 lb./ac. of N+50 lb./ac. of P_2O_5) applied at hills.

F.Y.M. applied 15 to 20 days before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 50′×24′. (b) 44′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good and healthy. No lodging. (ii) Nil. (iii) Height, earing dates and yield of grain. (iv) (a) 1957—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 651 lb./ac. (ii) 81.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	354	447	611	587	891	1015

S.E./mean =40.8 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(124).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To study the methods of application of F.Y.M. and Ammo. Phos. to Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 2.7.1958. (iv) (a) 2 harrowings. (b) Drilling. (c) 5 lb./ac. (d) 36″ between rows. (e) —. (v) Nil. (vi) *Babapuri* (late). (vii) Unirrigated. (viii) One weeding. (ix) 38.72″. (x) 20.11.1958.

2- TREATMENTS :

1. Control (no manure).
2. F.Y.M. at 10 C.L/ac. spread evenly.
3. F.Y.M. at 10 C.L/ac. applied in furrows.
4. F.Y.M. at 10 C.L/ac. applied at hills.
5. Ammo. Phos. (40 lb./ac. of N+50 lb./ac. of P_2O_5) applied in furrows after sowing.
6. Ammo. Phos. (40 lb./ac. of N+50 lb./ac. of P_2O_5) applied at hills in two doses before and after sowing.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50′×24′. (b) 44′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 930 lb./ac. (ii) 123.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	723	763	751	856	1210	1276

S.E/mean =50.43 lb./ac.

Crop :- Bajra. **Ref :- Gj. 56(86).**

Site :- Agri. Res. Stn., Porbandar. **Type :- 'M'.**

Object :—To find out the optimum manurial requirement for Bajra.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) and (b) N.A. (iii) 18.7.1956. (iv) (a) 1 ploughing and 1 harrowing (b) Drilling. (c) 18 lb./ac. (d) 36″ between rows. (e) N.A. (v) Nil. (vi) Amreli—medium. (vii) Unirrigated. (viii) 2 hoeings and 3 weedings. (ix) N.A. (x) 27.10.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. : $F_0=0$ and $F_1=2000$ lb./ac.

(2) 4 sources of 10 lb./ac. of N : S_0=Control (no manure), S_1=manure mixture, S_2=A/S, S_3=A.S.N. and S_4=Urea.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 50′×18′. (b) 45′×12′. (v) 2.5′×3′. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Raw data—N.A.

5. RESULTS :

(i) 811 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

	S_0	S_1	S_2	S_3	S_4	Mean
F_0	680	760	860	970	740	802
F_1	820	765	955	850	710	820
Mean	750	762	908	910	725	811

S.E.'s =N.A.

Crop :- Bajra.

Site :- Agri. Res. Stn., Porbandar.

Ref :- Gj. 56(88).

Type :- 'M'.

Object :—To study the response of Bajra to P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) and (b) N.A. (iii) 17.7.1956. (iv) (a) One ploughing and one harrowing. (b) Drilling. (c) 12 lb./ac. (d) 36″ between rows. (e) N.A. (v) Nil. (vi) Amreli—medium. (vii) Unirrigated. (viii) 3 weedings and 2 hoeings. (ix) N.A. (x) 25.10.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N : $N_0=0$ and $N_1=10$ lb./ac.

(2) 4 levels of P_2O_5 : $P_0=0$, $P_1=4.5$, $P_2=9$ and $P_3=18$ lb./ac.

N applied as A/S and P_2O_5 applied as Super.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 50′×18′. (b) 45′×12′. (v) 2.5′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Raw data—N.A.

5. RESULTS :

(i) 1006 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	Mean
N_0	880	1120	940	980	980
N_1	1000	1060	1126	940	1032
Mean	940	1090	1033	960	1006

S.E.'s =N.A.

Crop :- Bajra. **Ref :- Gj. 55(57).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out the suitable time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 26.7.1955. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) 18″ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. and 20 lb./ac. of P_2O_5. (vi) *Bajra*—207 (medium). (vii) Unirrigated. (viii) 2 interculturings. (ix) 27.20″. (x) 2.10.1955.

2. TREATMENTS :

Same as in expt. no. 56(16) on page 178.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 36′×18′. (b) 30′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Germination was good and the stand was satisfactory. (ii) No attack of pests and diseases ; damage due to seasonal abnormalities. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) Deesa. (b) Nil. (vi) and (vii) Nil.

5. RESULTS:

(i) 543 lb./ac. (ii) 46.02 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	578	642	515	475	505

S.E./mean 20.58 lb./ac.

Crop :- Bajra. **Ref :- Gj. 56(68).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out a suitable time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 29.5.1956. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) 18″ between rows. (e) N.A. (v) 5 C.L/ac. of F.Y.M. and 20 lb./ac. of P_2O_5. (vi) *Bajra*—207 (medium). (vii) Unirrigated. (viii) 3 interculturings. (ix) 32.06″. (x) 26.9.1956.

2. TREATMENTS

Same as in expt. no. 56(16) on page 178.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 36′×18′. (b) 30′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) Deesa. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1210 lb./ac. (ii) 176.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	1140	1048	1328	1382	1154

S.E./mean =79.1 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(74).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out a suitable time and method of application of A/S to Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut. (c) Nil. (ii) (a) Sandy *garadu*. (b) Refer soil analysis, Talod. (iii) 2.7.1957. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) 18″ between rows. (e) N.A. (v) 5 C.L/ac. of F.Y.M+20 lb./ac. of P_2O_5. (vi) *Bajra*—207. (vii) Unirrigated. (viii) 3 interculturings and 1 weeding. (ix) 14.99″. (x) 22.9.1957.

2. TREATMENTS :

Same as in expt. no. 56(16) on page 178.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 36′×18′. (b) 30′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory growth. Shortage of rain in later stages. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Deesa. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1333 lb./ac. (ii) 122.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	1339	1340	1306	1263	1415

S.E./mean =54.6 lb./ac.

Crop :- Bajra. **Ref :- Gj. 56(96).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of different manures on Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 19.7.1956. (iv) (a) One ploughing, one harrowing. (b) Drilling. (c) 5 lb./ac. (d) 3′ between rows. (e)—. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One interculturing. (ix) N.A. (x) 20.10.1956.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F_0=0 and F_1=2000 lb./ac.

Sub-plot treatments :

2 levels of N : $N_0=0$ and $N_1=10$ lb /ac.

Sub-sub-plot treatments :

4 sources of N : S_1=Manure mixture, S_2=A/S, S_3=A.S.N. and S_4=Urea.

F.Y.M. applied in furrows at sowing. N applied at sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 2 sub-plots/main-plot. ; 4 sub-sub-plots/sub-plot.(b) N.A. (iii) 4. (iv) (a) 12′×24′. (b) 6′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1286 lb./ac. (ii) (a) 351.7 lb./ac. (b) 148.4 lb./ac. (c) 224.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

N_1S_1=1260 lb./ac., N_1S_2=1223 lb./ac., N_1S_3=1248 lb./ac., N_1S_4=1292 lb./ac.

	N_0	N_1	Mean	S_1	S_2	S_3	S_4
F_0	1248	1223	1235	1248	1185	1235	1273
F_1	1399	1273	1336	1449	1286	1298	1311
Mean	1323	1248	1286	1348	1235	1267	1292

S.E. of difference of two

1. F marginal means = 62.2 lb./ac.
2. N marginal means = 26.2 lb./ac.
3. S marginal means = 56.1 lb./ac.
4. N means at the same level of F = 52.5 lb./ac.
5. F means at the same level of N = 95.4 lb./ac.
6. S means at the same level of F = 74.2 lb./ac.
7. F means at the same level of S = 131.1 lb./ac.
8. S means at the level of N_1 = 112.2 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(94).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of N and P_2O_5 on the yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 9.7.1956. (iv) (a) One ploughing, one harrowing. (b) Drilling. (c) 5 lb./ac. (d) 3′ between rows. (e)—. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 4 interculturings, 2 weedings. (ix) N.A. (x) 16.10.1956.

2. TREATMENTS :

All combinations of (1) and (2)

1. 2 levels of N : $N_0=0$ and $N_1=10$ lb./ac.
2. 4 levels of P_2O_5 : $P_0=0$, $P_1=4\frac{1}{2}$, $P_2=9$ and $P_3=18$ lb./ac.

N applied as A/S and P_2O_5 applied as Super on 9.8.1956.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 18′×24′. (b) 12′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 610.5 lb./ac. (ii) 98.61 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	Mean
N_0	549	618	585	649	600
N_1	589	618	662	615	621
Mean	569	618	623	632	610

S.E. of marginal mean of P =28.47 lb./ac.
S.E. of marginal mean of N =20.13 lb./ac.
S.E. of body of table =40.26 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(88).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of N and P_2O_5 on yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 2.7.1957. (iv) (a) Two ploughings and two harrowings. (b) to (e) N.A. (v) Nil. (vi) *Bajra* (local, early). (vii) Unirrigated. (viii) One thinning, 2 weedings and 1 interculturing. (ix) 34″. (x) 6.10.1957.

2. TREATMENTS : and 3. DESIGN :

Same as in expt. no. 56(94) on page 189.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Height of plants, no. and length of tillers. (iv) (a) 1956-57. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 826 lb./ac. (ii) 142.6 lb./ac. (iii) Both the main effects and their interaction are highly significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	P_3	Mean
N_0	464	713	912	905	749
N_1	806	974	787	1045	903
Mean	635	844	850	975	826

S.E. of marginal mean of N =29.1 lb./ac.
S.E. of marginal mean of P =41.2 lb./ac.
S.E. of body of table =58.2 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 57(91).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To find out optimum manurial requirement for Bajra.

1. BASAL CONDITIONS .

(i) (a) N.A. (b) Cotton. (c) 20 lb./ac. of N as A/S. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 2.7.1957. (iv) (a) Tractor ploughing and two harrowings (b) to (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Two harrowings and two weedings. (ix) 34″. (x) 7.10.1957.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F_0=0 and F_1=2000 lb./ac.

Sub-plot treatments :

4 sources of 10 lb./ac. of N : S_0=Control (no manure), S_1=Manure mixture (8 : 1 : 1), S_2=A/S, S_3=A.S.N. and S_4=Urea.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block, 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12′×24′ (b) 6′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, no. of tillers/plant and grain yield. (iv) (a) N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS .

(i) 794 lb./ac. (ii) (a) 156.2 lb./ac. (b) 139.7 lb./ac. (iii) Effect of S is highly significant and effect of F is significant. (iv) Av. yield of grain in lb./ac.

	S_0	S_1	S_2	S_3	S_4	Mean
F_0	499	757	594	740	784	675
F_1	652	1130	975	943	864	913
Mean	575	944	785	842	824	794

S.E. of difference of two

1. F marginal means = 49·4 lb./ac.
2. S marginal means = 69.9 lb./ac.
3. S means at the same level of F = 98.8 lb./ac.
4. F means at the same level of S =101.2 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(92).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the response of Bajra to application of micro-nutrients.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fennel. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 1.7.1957. (iv) (a) 2 ploughings, 3 harrowings. (b) Drilling. (c) 7 lb./ac. (d) 9″ between rows. (e) N.A. (v) F.Y.M. broadcast on 27.5.1957. (vi) *Bajra*—207. (vii) Unirrigated. (viii) One interculturing on 22.7.1957. (ix) 16.97″. (x) 23.9.1957.

2. TREATMENTS :

Same as in expt. no. 59(8) on page 182.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 18′×20′. (b) 16′×15′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal throughout the crop period. (ii) Nil. (iii) Grain and fodder yield, number of tillers. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1284 lb./ac. (ii) 239.0 lb./ac. (iii) Interaction Zn×B alone is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	11.0	—	—	34	−12	12	10	58	80	101	−79
Mn	−10.0	13	−33	—	—	20	−40	5	−25	−39	19
Cu	8.0	9	7	38	—22	—	—	−75	91	36	−20
Mo	18.5	−50	87	34	3	−64	101	—	—	22	15
B	23.5	113	−66	−6	53	51	−4	27	20	—	—

S.E. of mean response =42.2 lb./ac.
S.E. of differential response =59.8 lb./ac.

Crop :- Bajra. **Ref :- Gj. 58(59).**
Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the response of the Bajra to application of micro-nutrients.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 40 lb./ac. of N as A/S. (ii) (a) Sandy loam. (b) N.A. (iii) 2.7.1958. (iv) (a) Two ploughings, one harrowing. (b) Drilling. (c) 7 lb./ac. (d) 9″ between rows. (e) N.A. (v) 100 lb./ac. of A/S+100 lb./ac. of Super. (vi) *Bajra*—207. (vii) Unirrigated. (vii) Two interculturings on 22.7.1958 and 5.8.1958. (ix) 25.92″. (x) 8.10.1958.

2. TREATMENTS :

Same as in expt. no. 59(8) on page 182.

3. DESIGN :

(i) R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 18′×20′. (b) 16′×15′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Growth in Repl. II and IV was below normal, colour of grain turned black. (ii) Nil. (iii) Length of ear heads, length, thickness of plant, no. of tillers, length of root, weight of one plant in each treatment. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1181 lb./ac. (ii) 269.8 lb./ac. (iii) None of the effects is significant. (iv) Table of mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	5.5	—	—	−46	57	92	—81	—18	29	—12	23
Mn	59.0	7	111	—	—	139	—21	106	12	28	90
Cu	—68.5	18	—155	11	—148	—	—	−35	—102	—59	—78
Mo	—16.0	—40	8	31	—63	18	—50	—	—	8	—40
B	—47.0	—65	—29	—78	—16	—37	—57	—23	—71	—	—

S.E. of mean response = 47·7 lb./ac.
S.E. of differential response = 67.4 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 59(40).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the response of Bajra to application of micro-nutrients.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Light sandy. (b) N.A. (iii) 4.7.1959. (iv) (a) Nil. (b) Drilling. (c) 7 lb./ac. (d) 12″ between rows. (e) —. (v) Nil. (vi) *Bajra*—207. (vii) Unirrigated. (viii) 4 interculturings and 1 weeding. (ix) 53.81″. (x) 7.10.1959.

2. TREATMENTS :

Same as in expt. no. 59(8) on page 182.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) 144′×80′. (iii) 4. (iv) (a) 20′×18′. (b) 16′×15′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956-59. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 325.3 lb./ac. (ii) 110.1. lb./ac. (iii) None of the effects is significant. (iv) Table of mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	18.23	—	—	−14.75	51.21	9.58	26.88	−13.45	49.91	17.86	18.60
Mn	−1.39	−34.37	31.59	—	—	−16.05	13.27	−12.76	9.98	−1.87	−0.91
Cu	−19.03	−27.68	−10.38	−33.69	−4.37	—	—	−7.32	−30.74	−5.73	−32.33
Mo	37.80	6.12	69.48	26.43	49.17	49.51	26.09	—	—	31.70	43.90
B	−22.54	−22.91	−22.17	−23.02	−22.06	−9.24	−35.84	−28.64	−16.44	—	—

S.E. of mean response = 19.46 lb./ac.
S.E. of differential response = 27.52 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(63).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To determine the manurial requirements of Bajra.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light sandy. (b) N.A. (iii) 6.7.1958. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) 12″ between rows. (e) N.A. (v) Nil. (vi) *Bajra*—207. (vii) Irrigated. (viii) 2 weedings. (ix) 25.77″. (x) 23.9.1958.

2. TREATMENTS :

3 levels of N : N_0=0, N_1=20 and N_2=40 lb./ac.
N applied in 2 doses, 1st dose on 5.7.1958 and 2nd on 10.8.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 40′×45′. (iii) 6. (iv) (a) 40′×15′. (b) 36′×12′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 850 lb./ac. (ii) 75.27 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	N_0	N_1	N_2
Av. yield	817	875	857

S.E./mean =30.73 lb./ac.

Crop :- Bajra. **Ref :- Gj. 59(134).**

Site :- Dry Farming Res. Stn., Jam Khambalia. **Type :- 'MV'.**

Object :—To find out optimum dose of N, P and K for different varieties of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Shallow. (b) N.A. (iii) 10.7.1959. (iv) (a) One ploughing, one harrowing. (b) Drilling. (c) 4 lb./ac. (d) 3′ between rows. (e)—. (v) Nil. (vi) As per treatments (vii) Unirrigated. (viii) 2 interculturings. (ix) 44″. (x) 6.11.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 varieties of *bajra* : V_1=Local, V_2=L—11, V_3=28-15-2.

(2) 3 levels of N as A/S top dressed : N_0=0, N_1=20 and N_2=40 lb./ac.

(3) 3 levels of P_2O_5 as Super drilled at sowing : P_0=0, P_1=20 and P_2=40 lb./ac.

Sub-plot treatments :

2 levels of K_2O : K_0=0 and K_1=40 lb./ac.

N as A/S top dressed, P_2O_5 as Super drilled at sowing and K_2O applied as Pot. Sul.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 3 blocks/replication, 9 main-plots/block, 2 sub-plots/main-plot. (b) N.A. (iii) One. (iv) (a) 36′×21′. (b) 30′×15′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) Rajkot. (vi) and (vii) Nil.

5. RESULTS :

(i) 214 lb./ac. (ii) (a) 142.5 lb./ac. (b) 61.8 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	P_0	P_1	P_2	Mean	K_0	K_1
N_0	54	114	452	152	161	306	206	214	198
N_1	145	161	308	210	195	210	205	207	203
N_2	119	210	365	149	212	333	231	255	207
Mean	106	162	375	170	190	283	214	225	203
K_0	123	169	384	180	197	299			
K_1	89	154	365	160	181	266			
P_0	107	104	300						
P_1	103	131	335						
P_2	109	250	490						

S.E. of difference of two

1. V, N or P marginal means =47.5 lb./ac.
2. K marginal means =16.8 lb./ac.
3. K means at the same level of V, N or P =29.1 lb./ac.
4. V, N or P means at the same level of K =73.2 lb./ac.

Crop :- Bajra *(Kharif)*.

Site :- Agri. Res. Stn., Amreli.

Ref :- Gj. 54(8).

Type :- 'C'.

Object :—To find out optimum spacing and seed rate for Bajra.

1. BASAL CONDITIONS:

(i) (a) *Bajra*—Wheat—Groundnut—Cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 4.7.1954. (iv) (a) 3 harrowings. (b) By hand in furrow opened by axe. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. in the month of May. (vi) Mass selection. (vii) Unirrigated. (vii) Weeding and interculturing twice. (ix) 25.08". (x) 28.10.1954.

2. TREATMENTS:

Main-plot treatments :

4 spacings : S_1=18",S_2=24", S_3=30" and S_4=36".

Sub-plot treatments :

4 seed rates : R_1=5, R_2=10, R_3=15 and R_4=20 lb./ac.

3. DESIGN:

(i) Split-plot. (ii) 4 main-plots/block, 4 sub-plots/main-plot. (iii) 4. (iv) (a) 36'×19' (S_1), 34'×19' (S_2), 35'×19' (S_3), 36'×19 (S_4). (b) 30'×15'. (v) 2 rows on either side for S_1 and one row on either side for S_2, S_3 and S_4. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain and stalk. (iv) (a) 1952—1954. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 471.2 lb./ac. (ii) (a) 219.3 lb./ac. (b) 113.4 lb./ac. (iii) Main effect of R is significant. Main effect of S and interaction S×R are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean
R_1	517.2	369.3	482.6	650.5	504.9
R_2	537.0	544.5	499.5	501.0	520.4
R_3	398.1	379.9	435.6	509.7	430.8
R_4	337.4	353.8	476.3	547.9	428.8
Mean	447.4	411.9	473.5	552.2	471.2

S.E. of difference of two

1. S marginal means = 77.5 lb./ac.
2. R marginal means = 40.0 lb./ac.
3. R means at the same level of S =145.2 lb./ac.
4. S means at the same level of R = 80.1 lb./ac.

Crop :- Bajra *(Kharif)*.

Site :- Agri. Res. Stn., Amreli.

Ref :- Gj. 56(6).

Type :- 'C'.

Object :—To find out optimum spacing and seed rate for Bajra.

1. BASAL CONDITIONS

(i) (a) Cotton—*Bajra*—Groundnut. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 29, 30.6.1956. (iv) (a) N.A. (b) Hand drilling. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) *Bajra* (early). (vii) Unirrigated. (viii) Two interculturings and one weeding. (ix) 26.96". (x) 12 to 14.10.1956.

2. TREATMENTS :

Main-plot treatments :

3 spacings : $S_1=3'$, $S_2=4\frac{1}{2}'$ and $S_3=6'$.

Sub-plot treatments :

3 seed rates : $R_1=2$, $R_2=4$ and $R_3=6$ lb./ac.

Spacing between plants—irregular.

3. DESIGN :

(i) Split-plot. (ii) 3 main-plots/block, 3 sub-plots/main-plot. (iii) 6. (iv) (a) 45'×20' (S_1), 48'×20' (S_2). (b) 32'×18'. (v) 5, 4 and 3 rows lengthwise for S_1, S_2, and S_3 respectively. 1' on either side breadthwise. (vi) Yes.

4. GENERAL :

(i) Below normal and lodging in October due to rains. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 620 lb./ac. (ii) (a) 141.9 lb./ac. (b) 150.9 lb./ac. (iii) Main effect of R is significant. Main effect of S and interaction S×R are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	749	620	700	689
R_2	549	668	629	615
R_3	517	561	589	556
Mean	605	616	639	620

S.E. of difference of two

1. S marginal means =47.29 lb./ac.
2. R marginal means =50.29 lb./ac.
3. R means at the same level of S =87.12 lb./ac.
4. S means at the same level of R =85.43 lb./ac.

Crop :- Bajra ***(Kharif)*****.** **Ref :- Gj. 57(9).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To find out optimum spacing and seed rate for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 25.6.1957. (iv) (a) 2 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Local. (vii) Unirrigated. (viii) 2 interculturings. (ix) 27.42". (x) 25.10.1957.

2. TREATMENTS:

Same as in expt. no. 56(6) on page 195.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) 120'×87' (iii) 6. (iv) (a) 40'×30'. (b) 32'×18'. (v) 4'×6'. (vi) Yes.

4. GENERAL .

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) N.A.

5. RESULTS :

(i) 578 lb./ac. (ii) (a) 94.60 lb./ac. (b) 55.57 lb./ac. (iii) Main effects of S, R and interaction S×R are significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	543	626	596	588
R_2	522	621	629	591
R_3	503	570	592	555
Mean	523	606	606	578

S.E of difference of two

1. S marginal means =31.54 lb./ac.
2. R marginal means =18.53 lb./ac.
3. R means at the same level of S =32.07 lb./ac.
4. S means at the same level of R =41.00 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(95).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To find out optimum spacing and seed rate for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 1.7.1958. (iv) (a) One harrowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Local. (vii) Unirrigated. (viii) 3 interculturings. (ix) 28.76". (x) 8.10.1958.

2 TREATMENTS :

Same as in expt. no. 56(6) on page 195.

3. DESIGN :

Same as in expt. no. 57(9) on page 196.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1636 lb./ac. (ii) (a) 191.1 lb./ac. (b) 156.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	1711	1681	1542	1645
R_2	1685	1575	1609	1623
R_3	1784	1589	1551	1641
Mean	1727	1615	1567	1636

S.E of difference of two

1. S marginal means =63.70 lb./ac.
2. R marginal means =52.31 lb./ac.
3. R means at the same level of S =90 60 lb./ac.
4. S means at the same level of R =97.62 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 57(14).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To find out the optimum spacing and seed rate for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) As per treatments in expt. no. 56(15) on page 212+3 C.L./ac. of F.Y.M. (ii) (a) Yellowish brown. (b) Refer soil analysis, Deesa. (iii) 8.7.1957. (iv) (a) One ploughing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 3 C.L./ac. of F.Y.M. spread by hand 15 days before sowing. (vi) *Bajra*—207. (vii) Unirrigated. (viii) 2 harrowings. (ix) 14.57″. (x) 10.10.1957.

2. TREATMENTS :

Main-plot treatments :

3 spacings : S_1=12″, S_2=18″ and S_3=24″.

Sub-plot treatments :

3 seed rates : R_1=4, R_2=6 and R_3=8 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block, 3 sub-plots/main-plot. (iii) 6. (iv) (a) 36′×24′ (S_1 and S_2) 36′×26′ (S_3). (b) 30′×18′. (v) 3′ at either end and 3, 2 and 2 rows on either side for S_1, S_2 and S_3 respectively. (vi) Yes.

4. GENERAL :

(i) Below normal due to rains. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Amreli. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 237 lb./ac. (ii) (a) 58.50 lb./ac. (b) 84.40 lb./ac. (iii) Main effect of S is significant. Main effect of R and interaction S×R are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	175	198	274	216
R_2	289	192	216	232
R_3	243	235	306	236
Mean	236	208	265	237

S.E. of the difference of two

1. S marginal means =19.49 lb./ac.
2. R marginal means =28.13 lb./ac.
3. R means at the same level of S =48.72 lb./ac.
4. S means at the same level of R =44.31 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(7).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To find out the optimum spacing and seed rate for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra—Tur*. (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Deesa. (iii) 26.7.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Bajra*—207. (vii) Unirrigated. (viii) 1 interculturing. (ix) 14.13″. (x) 5.11.1958.

2. TREATMENTS :

Same as in expt. no. 57(14) above.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block, 3 sub-plots/main-plot. (b) 108′×76′. (iii) 6. (iv) (a) 24′×36′ (S_1 and S_2) and 26′×36′ (S_3). (b) 18′×30′. (v) 3′×3′ (S_1 and S_2) and 4′×3′ (S_3). (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 563.9 lb./ac. (ii) (a) 154.1 lb./ac. (b) 109.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	475.1	608.8	587.1	557.0
R_2	607.8	577.2	509.1	564.7
R_3	513.0	649.4	547.5	570.0
Mean	531.9	611.8	547.9	563.9

S.E. of difference of two

1. S marginal means	=51.37 lb./ac.
2. R marginal means	=36.33 lb./ac.
3. R means at the same level of S	=62.92 lb./ac.
4. S means at the same level of R	=72.63 lb./ac.

Crop :- Bajra *(Kharif).* **Ref :- Gj. 54(41).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the effect of different spacings on the yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 9.7.1954. (iv) (a) 1 harrowing. (b) Drilling. (c) 6 lb./ac. (d) As per treatments. (e) Nil. (v) 8 lb. of manure mixture drilled with seeds and 75 lb. of manure mixture top dressed on 1.8.1954. (vi) *Bajra*—28-15. (vii) Nil. (viii) 3 interculturings. (ix) N.A. (x) 12.10.1954.

2. TREATMENTS :

2 spacings between lines : $S_1=18''$ and $S_2=36''$.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 7. (iv) (a) 66′×24′. (b) 60′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Slight blister attack. (iii) Yield of grain. (iv) (a) 1954. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 290.0 lb./ac. (ii) 17.27 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2
Av. yield	313.0	267.0

S.E./mean =6.52 lb./ac.

Crop :- Bajra *(Kharif).* **Ref :- Gj. 56(26).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the effect of different spacings on the yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 11.7.1956. (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) 400 lb. of manure mixture+400 lb. of castor cake+300 lb./ac. of P_2O_5 broadcast. 320 lb. of manure mixture top dressed on 9.8.1956. (vi) *Bajra*-28-15. (vii) Nil. (viii) One interculturing. (iv) 33.75″. (x) 3.10.1957.

2. TREATMENTS :

5 spacings between plants : $S_1=6''$, $S_2=9''$, $S_3=12''$, $S_4=15''$ and $S_5=18''$,
Spacing between rows was 18″ uniformly.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 35′×12′. (b) 29′×7½′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1514 lb./ac. (ii) 128.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4	S_5
Av. yield	1574	1606	1518	1522	1350

S.E./mean =57.2 lb./ac.

—=——

Crop :- Bajra. **Ref :- Gj. 57(28).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object : —To find out the effect of different spacings on yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) 100 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 3.7.1957. (iv) (a) Ploughing, harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Bajra*-28-15. (vii) Irrigated. (viii) Gap-filling, interculturing and weeding. (ix) 15.09″. (x) N.A.

2. TREATMENTS :

1. Control with seed drilled.
2. Seed drilled.
3. 6″ spacing between plants.
4. 9″ spacing between plants.
5. 12″ spacing between plants.
6. 15″ spacing between plants.
7. 18″ spacing between plants.

For treatments 2 to 7 ; 800 lb./ac. of manure mixture was given. For treatments 3 to 7 spacing between rows was 18″ equally.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 360 sq. ft. (b) 180 sq. ft. (v) One row on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plant, no. of earheads, length and circumference of earheads. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 656.0 lb./ac. (ii) 100.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7
Av. yield	669.0	658.0	722.0	710.0	787.0	728.0	321.0

S.E./mean =50.21 lb./ac.,

Crop :- Bajra. **Ref :- Gj. 57(27).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out a suitable spacing between rows and between plants for Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) 50 lb./ac. of manure mixture+50 lb./ac. of A/S. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) N.A. (iv) (a) Ploughing, harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Bajra*-28-15. (vii) Irrigated. (viii) Gap filling, interculturings and weedings. (ix) 15.09″. (x) 2.7.1958.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings between plants : $S_1=6''$, $S_2=9''$ and $S_3=12''$.
(2) 3 spacings between rows : $R_1=18''$, $R_2=36''$ and $R_3=54''$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 540 sq. ft. (b) 324 sq. ft. (v) 3 rows on each side (R_1), 1 on one side and 2 on the other (R_2) and 1 on each side (R_3). (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1956—contd. (b) No. (c) Nil (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 300.0 lb./ac. (ii) 57.03 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	Mean
S_1	300	267	332	300
S_2	251	305	331	296
S_3	323	277	308	303
Mean	291	283	324	300

S.E. of any marginal mean =16.46 lb./ac.
S.E. of body of table =28.51 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(26).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out if pre-monsoon sowing under irrigated conditions gives more yield for Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Harrowing. (b) to (e) N.A. (v) 100 lb./ac. of manure mixture before sowing. (vi) *Bajra*-28-15. (vii) Irrigated. (viii) Gap-filling, interculturings and weeding. (ix) 15.09″. (x) N.A.

2. TREATMENTS :

5 dates of sowing : D_1=15.6.1957, D_2=22.6.1957, D_3=1.7.1957, D_4=6.7.1957 and D_5=18.7.1957.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40′×14′. (b) 34′×7½′. (v) Two rows on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plant, no., length and circumference of earheads. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 210 lb./ac. (ii) 49.81 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	193	210	189	232	225

S.E./mean =22.26 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(19).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the best date of sowing for Bajra.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 5 lb./ac. (d) 18″ between rows. (e) N.A. (v) 20 lb./ac. of manure mixture before sowing. (vi) *Bajra*—28-15-2. (vii) Irrigated. (viii) 3 weedings. (ix) About 13″. (x) 2.10.1958, 10.10.1958 and 22.10.1958.

2. TREATMENTS :

5 dates of sowing : D_1=15.6.1958, D_2=22.6.1958, D_3=29.6.1958, D_4=6.7.1958 and D_5=13.7.1958.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40′×14′. (b) 34′×7½′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of leaf caterpillars. (iii) Yield of grain. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Junagadh and Jamnagar. (b) N.A. (vi) As the plan of the expt. is not available it was analysed as R.B.D. (vii) Nil.

5. RESULTS :

(i) 267 lb./ac. (ii) 58.08 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	170	189	296	326	354

S.E./mean =25.96 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 59(123).**

Site :- Dry Farming Res. Stn., Jam Khambalia. **Type :- 'C'.**

Object :—To find out optimum spacing and seed rate for Bajra

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Shallow. (b) N.A. (iii) 11.7.1959. (iv) (a) One ploughing, two horrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Bajra* 28-15-2. (vii) Unirrigated. (viii) 2 interculturings. (ix) 44″. (x) 13.11.1959.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=18″, S_2=36″ and S_3=54″.

Sub-plot treatments :

3 seed rates ; R_1=3, R_2=4 and R_3=5 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 45′×30′. (b) 39′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rains. (vii) Nil.

5. RESULTS :

(i) 72.52 lb./ac. (ii) (a) 28.34 lb./ac. (b) 27.32 lb./ac. (iii) Main effects of S, R and interaction S×R are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	81.83	76.55	79.50	79.29
R_2	66.86	70.19	76.55	71.20
R_3	46.38	83.15	71.67	67.07
Mean	65.02	76.63	75.91	72.52

S.E. of difference of two

1. S marginal means = 9.45 lb./ac.
2. R marginal means = 9.11 lb./ac.
3. R means at the same level of S =15.77 lb./ac.
4. S means at the same level of R =15.97 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(85).**

Site :- Agri. Res. Stn., Porbandar. **Type :- 'C'.**

Object :—To find out a suitable spacing between plants for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra* and castor. (c) Nil. (ii) (a) Medium. (b) N.A. (iii) 19.7.1956. (iv) (a) 1 ploughing ; 2 harrowings. (b) Drilling. (c) 12 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Amreli (medium). (vii) Unirrigated. (viii) 2 weedings and 1 interculturing. (ix) N.A. (x) 30.10.1956.

2. TREATMENTS :

2 spacings between rows : $S_1=18''$ and $S_2=36''$.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 45′×12′. (b) 43′×9′. (v) 1′×1.5′. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Nil. (iii) Grain yield. (iv) (a) and (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Plotwise yield data N.A. (vii) Nil.

5. RESULTS :

(i) 296. (ii) to (iii) N.A. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2
Av. yield	293	300

S.E./mean =N.A.

Crop :- Bajra. **Ref :- Gj. 57(107).**

Site :- Agri. Res. Stn., Porbandar. **Type :- 'C'.**

Object :—To find out a suitable spacing between plants for Bajra.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium. (b) N.A. (iii) 10.7.1957. (iv) (a) Ploughing and 1 harrowing. (b) Drilling. (c) 50 lb./ac. (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) Medium. (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) N.A. (x) 10.10.1957.

2. TREATMENTS :

Same as in expt. no. 56(85) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 50′×18′. (b) 45′×12′. (v) 2.5′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) Nil. (b) N.A. (vi) Plotwise yield data N.A. (vii) Nil.

5. RESULTS :

(i) 883 lb./ac. (ii) to (iii) N.A. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2
Av. yield	900	866

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(87).**

Site :- Agri. Res. Stn., Porbandar. **Type :- 'C'.**

Object :—To find out a suitable sowing date for Bajra.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Castor. (c) Nil. (ii) (a) Medium. (b) N.A. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 6 lb./ac. (d) 36″. (e) N.A. (v) 6 C.L./ac. of F.Y.M. in furrows. (vi) Amreli (medium). (vii) Unirrigated. (viii) 3 weedings and 2 interculturings. (ix) N.A. (x) 28th October to 6th November according to treatments.

2. TREATMENTS :

5 dates of sowing : D_1=17.7.1956, D_2=25.7.1956, D_3=31.7.1956, D_4 =12.8.1956 and D_5=19. 8.1956.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 45′×12′. (b) 42′×9′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) and (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) Plotwise yield data N.A. (vii) Nil.

5. RESULTS :

(i) 282 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	373	440	266	200	133

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(98).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To find out a suitable sowing date for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton and paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) 2 ploughings and 2 harrowings. (b) Dibbling. (c) 5 lb./ac. (d) 3′×3′. (e) 4-5 seeds/dibble. (v) 20 lb./ac. of N as manure mixture in 2 doses. (vi) N.A. (vii) Irrigated. (viii) 3 weedings and 2 interculturings. (ix) N.A. (x) 18.10.1956.

2. TERATMENTS :

7 dates of sowing : D_1=15.6.1956, D_2=22.6.1956, D_3=29.6.1956, D_4=6.7.1956, D_5=13.7.1956, D_6= 20.7.1956 and D_7=27.7.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36′×24′. (b) 30′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Replication V gave very low yield and hence it is excluded from statistical analysis. (vii) Nil.

5. RESULTS :

(i) 408 lb./ac. (ii) 85.07 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6	D_7
Av. yield	602	575	596	428	449	121	85

S.E./mean =42.53 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(87).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To find out suitable sowing date for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 40 lb./ac. of N as A/S. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) 20 lb./ac. as manure mixture. (vi) Local (medium). (vii) Unirrigated. (viii) 3 weedings and thinning. (ix) 34". (x) 30.9.1957.

2. TREATMENTS:

7 dates of sowing : D_1=15.6.1957, D_2=22.6.1957, D_3=29.6.1957, D_4=6.7.1957, D_5=13.7.1957, D_6= 20.7.1957 and D_7=27.7.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) Nil. (iii) 5. (iv) (a) 36'×24'. (b) 30'×18'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plants, no. of effective tillers, length of ear head and grain yield. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 196 lb./ac. (ii) 92.68 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6	D_7
Av. yield	260	301	420	163	152	50	24

S.E./mean =41.43 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(97).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To find out suitable spacing between plants for better yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Ref soil analysis, Umrala. (iii) 9.7.1956. (iv) (a) Nil. (b) Drilling. (c) 5 lb./ac. (d) As per treatments. (e) N.A. (v) 20 lb./ac. in the form of manure mixture in 2 doses. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings, 1 interculturing and gap-filling. (ix) N.A. (x) 21, 22.10.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings between rows : R_1=18", R_2=36" and R_3=72".

(2) 3 spacings between plants : S_1=6", S_2=9" and S_3=12".

3. DESIGN :

i) Fact in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 36'×24'. (b) 30'×12'. (v) 3'×6'. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rain ; germination not good. (vii) Nil.

5. RESULTS :

(i) 445 lb./ac. (ii) 169.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	Mean
S_1	529	388	529	482
S_2	328	469	464	420
S_3	489	373	434	432
Mean	449	410	476	445

S.E. of any marginal mean =40.0 lb./ac.

S.E. of body of table =69.3 lb./ac.

Crop :- Bajra. **Ref :- Gj. 57(89).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To find out a suitable spacing between plants for better yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 20 lb /ac. as manure mixture (8 : 1 : 1). (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 6.7.1957. (iv) (a) 2 ploughings, 2 harrowings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) 20 lb./ac. as manure mixture. (vi) *Bajra* local (early). (vii) Unirrigated. (vii) 2 weedings and interculturing. (ix) 34". (x) 9.10.1957.

2. TREATMENTS : and 3. DESIGN :

Same as in expt. no. 56(97) on page 205.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of effective tillers and grain yield. (iv) (a) 1955—1957. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RETULTS :

(i) 445 lb./ac. (ii) 100.5 lb./ac. (iii) Main effect of R is highly significant. Main effect of S is significant and interaction S×R is not significant. (iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	Mean
S_1	618	522	357	499
S_2	457	591	274	441
S_3	468	475	247	397
Mean	514	529	293	445

S.E. of any marginal mean =23.69 lb./ac.

S.E. of body of table =41·04 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(95).**

Site :- Agri. Res. Stn., Umrala. Type :- 'C'.

Object :—To find out a suitable spacing between plants for better yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 9.7.1956. (iv) (a) 1 harrowing. (b) Drilling. (c) 5 lb./ac. (d) As per treatments. (e) N.A. (v) 25 lb./ac. as manure mixture. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and 1 interculturing. (ix) N.A. (x) 25.10.1957.

2. TREATMENTS :

5 spacings between plants : $S_1=6''$, $S_2=9''$, $S_3=12''$, $S_4=15''$ and $S_5=18''$.
Spacing between rows is 18" for all treatments.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 35'×12'. (b) 29'×6'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Due to heavy rains the germination was very poor and hence resowing was done. (vii) Nil.

5. RESULTS :

(i) 864 lb./ac. (ii) 175.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4	S_5
Av. yield	1026	889	839	778	789

S.E./mean =78.28 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 57(90).**

Site :- Agri. Res. Stn., Umrala. Type :- 'C'.

Object :—To find out a suitable spacing between plants for better yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 30 lb./ac. of N as A/S. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 2.7.1957. (iv) (a) Tractor ploughing and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) 2 intercultures and 2 weedings. (ix) 34". (x) 7.10.1957.

2. TREATMENTS : to 3. DESIGN :

Same as in expt. no. 56(95) above.

4. GENERAL :

(i) Normal. (ii) Blister beetle. (iii) Height of plants and no. of tillers per plant, grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 721 lb./ac. (ii) 86.72 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S_1	S_2	S_3	S_4	S_5
Av. yield	836	779	709	690	590

S.E./mean =38.76 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(7).**

Site :- Agri. Res. Stn., Amreli. Type :- 'CM'.

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Bajra*—Groundnut. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 7.7.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) Local (early). (vii) Unirrigated. (viii) 2 interculturings and 2 thinnings. (ix) 26.96″. (x) 14. 10. 1956.

2. TREATMENTS :

1. Departmental method : Spacing between rows 3′. Seed rate 5 lb./ac. Top dressing with 40 lb./ac. of N as A/S and 20 lb./ac. of P_2O_5 as Super. A/S applied in two equal doses first at planting and second on 8.8.1958. Super spread at the time of sowing.
2. Local method : Spacing between rows 3′ and covering the seeds by harrow.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 33′×18′. (b) 27′×12′. (v) 3′ alround the plot. (vi) Yes.

4. GENERAL :

(i) Germination was normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) Deesa and Talod. (b) Nil. (vi) and (vii) Nil

5. RESULTS :

(i) 308 lb./ac. (ii) 45.38 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	374	242

S.E./mean =13.1 lb./ac.

Crop :- Bajra ***(Kharif).*** **Ref :- Gj. 57(8).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 25. 6. 1957. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) 3′ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Local (E.M.S.). (vii) Unirrigated. (viii) 3 interculturings. (ix) 27.42″. (x) 25. 10. 1957.

2. TREATMENTS :

Same as in expt. no. 56(7) on page 207.

3. DESIGN :

(i) R. B. D. (ii) (a) 2. (b) N. A. (iii) 12. (iv) (a) 33′×18′. (b) 27′×12′. (v) 3′ alround the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N. A. (vi) and (vii) Nil.

5. RESULTS :

(i) 713 lb./ac. (ii) 145.5 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	881	546

S.E./mean =42·0 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(69).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis. Amreli. (iii) 2.7.1958. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) 36″. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) Local. (vii) Unirrigated. (viii) 2 interculturings. (ix) 28.50″. (x) 10.10.1958.

2. TREATMENTS :

Same as in expt. no. 56(7) on page 207.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) 33′×18′. (b) 30′×15′. (v) 1.5′ alround the plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Crop in replication 1 and 12 was under water logged condition and hence yield data for these replications was not recorded. Hence 10 replications only.

5. RESULTS :

(i) 1037 lb./ac. (ii) 146.8 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	1198	876

S.E./mean =42.4 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 59(44).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 30.6.1959. (iv) (a) 1 harrowing. (b) Drilling. (c) 2 lb./ac. (d) 36″. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) E.M.S.—(local). (vii) Unirrigated. (viii) 1 interculturing. (ix) 45.56″. (x) 9.10.1959.

2. TREATMENTS :

Same as in Expt. no. 56(7) on page 207.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 33′×18′. (b) 30′×15′. (v) 1.5′ alround the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 437.5 lb./ac. (ii) 64.18 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	547	328

S.E./mean =18.53 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 55(18).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'CM'.**

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Yellowish brown (b) Refer soil analysis, Deesa. (iii) 15.8.1955. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) 207. (vii) Unirrigated. (viii) 1 interculturing and 2 weedings. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Departmental method : Seed rate 4 lb./ac., spacing 15″ between rows, 20 lb./ac. of N as A/S and 20 lb./ac. of P_2O_5 as Super.
2. Local method : Seed rate 8 lb./ac. with 12″ spacing between rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42′-6″×20′ (Dept.), 42-6″×19′ (Local). (b) 36′-3″×15′. (v) 3′-1.5″×2.5″ (Dept.), 3′-1.5″×2′ (Local). (vi) Yes.

4. GENERAL :

(i) Due to lack of rains in the beginning sowing was delayed and thereafter constant rain in September damaged the crop. (ii) Considerable attack of white ants. (iii) Grain yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 50 lb./ac. (ii) 16.02 lb./ac. (iii) Treatments differ highly significantly (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	41	59

S.E./mean =4.63 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(17).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'CM'.**

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moth* and *Mug*. (c) Nil. (ii) (a) Coarse sandy loam. (b) Refer soil analysis, Deesa. (iii) 25.7.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) 207. (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) 35.39″. (x) 14.11.1956.

2. TREATMENTS :

Same as in expt. no. 55(18) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42′-6″×20′, 42′-6″×19′. (b) 36′-3″×15′. (v) 3′-1½″. along length and 4 rows along breadth. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of cock hopper beetle. The damage was not serious. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) Amreli and Talod. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 206 lb./ac. (ii) 36.7 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	214	198

S.E./mean =10.6 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 57(16).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'CM'.**

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* fodder. (c) Nil. (ii) (a) Yellowish loam. (b) Refer soil analysis, Deesa. (iii) 6.7.1957. (iv) (a) One ploughing during February. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 3 C.L./ac. of F.Y.M. spread by hand. (vi) 207. (vii) Unirrigated. (viii) One harrowing after rain. (ix) 14.57". (x) 8.10.1957.

2. TREATMENTS :

Same as in expt. no. 55(18) on page 210.
Manure spread by hand on 4.7.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42′6″×20′, 42′6″×19′. (b) 38′3″×15′. (v) 3′—1½″ along length and 4 rows along breadth. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) Amreli and Talod. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 569 lb./ac. (ii) 133.7 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	460	678

S.E./mean =38.6 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(9).**

Site :- Agri. Res. Stn., Dessa. **Type :- 'CM'.**

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra—Tur*. (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Dessa. (iii) 23.7.1958. (iv) (a) One ploughing and one harrowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 3 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 1 interculturing. (ix) 14.13". (x) 15.10.1958.

2. TREATMENTS :

Same as in expt.no. 55(18) on page 210.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) 120′×42½′. (iii) 12. (iv) (a) 20′×42½′. (b) 15′×36½′. (v) 2.5′×3.13′. (vi) Yes.

4. GENERAL .

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 829 lb./ac. (ii) 112.9 lb./ac. (iii) Treatments differ highly significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	709	948

S.E./mean =32.6 lb./ac

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(15).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'CM'.**

Object :—To compare departmental method to local method of Bajra cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) 2 C.L./ac. of F.Y.M. and as per treatments. (ii) (a) N.A. (b) Refer soil analysis, Dessa. (iii) 19 to 23.7.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 3 C.L./ac. of F.Y.M. broadcast 15 days before sowing. (vi) 207. (vii) Unirrigated. (viii) Two weedings and two interculturings. (ix) 35.39″. (x) 22 to 24.11.1956.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) Spacing between rows : $S_1=24''$, $S_2=36''$ and $S_3=48''$.

(2) Seed rate : $R_1=2$, $R_2=4$, $R_3=6$ and $R_4=8$ lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

(2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=30$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 44′×32′ for 24″, 48″ spacing and 44′×30′ for 36″ spacing. (b) 36′×24′. (v) 4′ at either ends and 2 rows on either sides for 24″ and 1 row for 48″, 36″ spacing. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) There was attack of cock hopper beetle on the crop. It was controlled by light trapping hence it was not serious. (iii) Grain yield. (iv) (a) 1956—contd. (b) Yes. (c) No. (v) (a) Niphad, Talod. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 315 lb./ac. (ii) (a) 176.6 lb./ac. (b) 107.3 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	R_1	R_2	R_3	R_4	P_0	P_1
N_0	300	251	266	272	235	320	286	248	262	282
N_1	282	315	253	283	249	305	290	270	273	293
N_2	392	417	363	391	339	414	370	438	383	398
Mean	324	328	294	315	274	346	315	325	306	324
P_0	314	315	290	306	255	333	310	326		
P_1	335	341	298	324	294	359	321	324		
R_1	263	300	260	274						
R_2	351	370	317	346						
R_3	298	320	328	315						
R_4	385	320	271	325						

S.E. of difference of two

1. S marginal means =18.0 lb./ac.
2. R marginal means =20.8 lb./ac.
3. N marginal means =10.9 lb./ac.
4. P marginal means = 8.9 lb./ac.
5. N means at the same level of S =26.8 lb./ac.
6. S means at the same level of N =33.6 lb./ac.
7. P means at the same level of S =21.9 lb./ac.
8. S means at the same level of P =29.8 lb./ac.
9. N means at the same level of R =31.0 lb./ac.
10. R means at the same level of N =38.8 lb./ac.
11. P means at the same level of R =25.3 lb./ac.
12. R means at the same level of P =34.5 lb./ac.

S.E. of body of S×R table =36.0 lb./ac.

S.E. of body of N×P table =15.5 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(76).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To assess the effect of different spacings in combination with N and P on the yield of Bajra.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black with poor fertility. (b) Refer soil analysis, Halvad. (iii) 19.7.1958. (iv) (a) 2 harrowings. (b) Dibbling. (c) to (e) Nil. (v) Nil. (vi) *Bajra*—28-15-2. (vii) Irrigated. (viii) 2 interculturings and 1 weeding. (ix) 13″. (x) 2.10.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 row spacings : $S_1=18''$, $S_2=36''$ and $S_3=54''$.
(2) 3 plant spacings : $C_1=6''$, $C_2=9''$ and $C_3=12''$.
(3) 3 doses of manures : M_0=Control, M_1=20 lb./ac. of N+10 lb./ac. of P_2O_5 and M_2=40 lb./ac. of N+20 lb./ac. of P_2O_5.

P_2O_5 broadcast before sowing. N applied in two equal doses, one before sowing and the other one month after sowing.

3. DESIGN :

(i) 3^3 confounding SCM and SCM^2 effects. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory due to scanty rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) N.A. (c) No. (v) (a) Junagadh, Umrala. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 501 lb./ac. (ii) 70.89 lb./ac. (iii) Main effects of S and M are highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	C_1	C_2	C_3
M_0	416	405	265	362	385	361	340
M_1	566	517	401	495	474	526	484
M_2	705	670	563	646	616	650	671
Mean	562	531	410	501	492	512	499
C_1	580	550	345				
C_2	552	552	433				
C_3	554	490	452				

S.E. of any marginal mean =16.71 lb./ac.
S.E. of body of any table =28.74 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 59(56).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To assess the best combination of spacing between rows and plants with optimum dose of N and P for Bajra.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) 13 C.L./ac. of compost and 44 lb./ac. of manure mixture. (ii) (a) Medium black with poor fertility. (b) Refer soil analysis, Halvad. (iii) 3.7.1959. (iv) (a) 1 harrowing. (b) Dibbling. (c) and (d) N.A. (e) 3-4 seeds/dibble. (v) Nil. (vi) *Bajra*—28-15-2. (vii) Unirrigated. (viii) 2 interculturings and 4 weedings. (ix) About 34″. (x) 24.10.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 row spacings : $S_1=18''$, $S_2=36''$ and $S_3=54''$.

(2) 3 plant spacings : $C_1=6''$, $C_2=9''$ and $C_3=12''$.

(3) 3 doses of manures : M_0=Control, M_1=10 lb./ac. of N+5 lb./ac. of P_2O_5 and M_2=20 lb./ac. of N+10 lb./ac. of P_2O_5.

3. DESIGN :

(i) 3^3 partially confounding SCM and SCM^2 effects. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) Due to rains immediately after sowing the germination was poor. (ii) Slight attack of stem-borer and blisters. (iii) Grain yield. (iv) (a) 1958—contd. (b) and (c) No. (v) (a) Junagadh, Umrala, Jamnagar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 310 lb./ac. (ii) 57.79 lb./ac. (iii) Main effect of M and interaction M×S are significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	C_1	C_2	C_3
M_0	262	259	243	255	286	250	228
M_1	281	298	305	295	310	290	284
M_2	464	347	332	381	387	367	388
Mean	336	301	293	310	328	302	300
C_1	357	323	302				
C_2	352	277	279				
C_3	298	303	299				

S.E. of any marginal mean =13.62 lb./ac.
S.E. of body of any table =23.60 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(119).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'CM'.**

Object :—To compare different methods of cultivation for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 28. 7. 1956. (iv) (a) N.A. (b) As per treatment. (c) and (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 29.03″. (x) 24. 10. 1956.

2. TREATMENTS :

3 methods of cultivation :

1. Russian method : Hand sowing at 3′×3′ spacing and applying 5 C.L./ac. of F.Y.M.
2. Local method (i) : Drilling at 18″ spacing.
3. Local method (ii) : Drilling at 18″ spacing and applying 5 C.L./ac. of F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) and (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Raw data N.A.

5. RESULTS :

(i) 170 lb./ac. (ii) N.A. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3
Av. yield	200	120	190

S.E./mean =N.A.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(116).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'CM'.**

Object :—To find out optimum manurial and spacing requirements of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 26.6.1958. (iv) (a) One ploughing and one harrowing. (b) Hand sowing. (c) N.A. (d) As per treatments. (e)—. (v) Nil. (vi) Local—11. (vii) Nil. (viii) Two interculturings. (ix) 28.42″. (x) 21.10.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 spacings between rows : $S_1=18''$, $S_2=36''$ and $S_3=54''$.
(2) 3 spacings between plants : $C_1=6''$, $C_2=9''$ and $C_3=12''$.
(3) 3 manurial doses : $M_0=0$, $M_1=20$ lb./ac. of N+10 lb./ac. of P_2O_5 and $M_2=40$ lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S broadcast in two doses; 1st at sowing and 2nd after six weeks. P_2O_5 as Super drilled before sowing.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 253 lb./ac. (ii) 46.62 lb./ac. (iii) Main effects of S and M are highly significant. Interaction S×F is significant. Others are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
C_1	282	267	223	257	207	288	277
C_2	295	202	245	247	211	272	259
C_3	280	235	246	254	222	268	271
Mean	286	235	238	253	213	276	269
M_0	218	224	198				
M_1	308	231	289				
M_2	331	249	228				

S E. of any marginal mean =10.99 lb./ac.
S.E. of body of any table =19.04 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 59(23).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'CM'.**

Object :—To find out the optimum manurial and spacing requirements of Bajra.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Jowar.* (c) Nil. (ii) (a) Clay loam to medium black. (b) N.A. (iii) 27.6.1959. (iv) (a) 2 ploughings and 2 harrowings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) 30″. (x) 16.10.1959.

2. TREATMENTS:

Same as in expt. no. 58(116) on page 215.

3. DESIGN:

(i) 3^3 Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) 40′×15′. (b) 34′×9′. (v) 3′ alround. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) Junagadh, Umrala, Porbandar. (b) N.A. (vi) and (vii) Nil.

5. RESULT:

(i) 337 lb./ac. (ii) 79.71 lb./ac. (iii) Main effects of S and M and interaction SM are highly significant. Others are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
C_1	341	340	291	324	159	255	558
C_2	284	425	310	339	149	261	611
C_3	363	392	283	346	187	338	514
Mean	329	386	295	337	164	285	561
M_0	189	143	160				
M_1	312	322	220				
M_2	487	692	503				

S.E. of any marginal mean =18.79 lb./ac.
S.E. of body of any table =32.55 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(86).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'.**

Object :—To find out optimum manurial and spacing requirements of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 8.7.1958. (iv) (a) N.A. (b) Hand sowing. (c) 5 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Babapuri.* (vii) N.A. (viii) N.A. (ix) 38.72″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 58(116) on page 215.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1958—contd. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1061 lb./ac. (ii) 175.5 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S₁	S₂	S₃	Mean	M₀	M₁	M₂
C₁	1041	1094	1077	1071	901	1085	1227
C₂	1108	1160	946	1071	1011	990	1212
C₃	1042	1001	1083	1042	950	1061	1115
Mean	1063	1085	1035	1061	954	1054	1184
M₀	929	999	934				
M₁	1033	1090	1013				
M₂	1229	1166	1159				

S.E. of any marginal mean =41.38 lb./ac.
S.E. of body of any table =71.67 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 59(81).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'.**

Object :—To find out the optimum manurial and spacing requirements of Bajra.

1. BASAL CONDITIONS

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 30.6.1956. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Babapuri*. (vii) Unirrigated. (viii) N.A. (ix) 60.42″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 58(116) on page 215.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1958—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 504 lb./ac. (ii) 87.69 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S₁	S₂	S₃	Mean	M₀	M₁	M₂
C₁	479	528	599	535	409	567	630
C₂	450	497	460	469	374	547	486
C₃	510	535	479	508	423	498	603
Mean	480	520	513	504	402	537	573
M₀	417	426	363				
M₁	505	530	577				
M₂	517	604	599				

S.E. of any marginal mean =20.76 lb./ac.
S.E. of body of any table =35.80 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 55(56).**

Site :- Agri. Res. Stn., Talod. **Type :- 'CM'.**

Object :—To find out a suitable method of cultivation for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow pastures. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Talod. (iii) 24.7.1955. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Bajra*. 207 (medium). (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 27.20″. (x) 18.10.1955.

2. TREATMENTS :

2 methods of cultivation :

1. Departmental method : 40 lb./ac. of N in two equal doses and 20 lb./ac. of P_2O_5 as a single dose. Seed rate—4 lb./ac. with 15″ spacing.
2. Local method : Seed rate—5 lb./ac. with 12″ spacing.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 114′×10′. (b) 108′×5′. (v) 3′×2.5′. (vi) Yes.

4. GENERAL :

(i) Patchy germination and poor setting. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) Amreli and Deesa. (b) N.A. (vi) 40% damage due to seasonal abnormalities. (vii) Nil.

5. RESULTS :

(i) 156 lb./ac. (ii) 32.21 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	212	101

S.E./mean =9.30 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 56(67).**

Site :- Agri. Res. Stn., Talod. **Type :- 'CM'.**

Object :—To find out a suitable method of cultivation for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy. (b) Refer soil analysis, Talod. (iii) 28.6.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Bajra*—207 (medium). (vii) Unirrigated. (viii) 4 interculturings and 1 weeding. (ix) 32.06″. (x) 26.9.1956.

2. TREATMENTS :

Same as in expt. no. 55(56) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 41′×20′. (v) 36′×15′. (v) 2.5′×2.5′. (vi) No.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Fodder and grain yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) Amreli and Deesa. (b) N.A. (vi) and (vii) The expt. was actually planned as paired-plot but analysed as R.B.D.

5. RESULT :

(i) 686 lb./ac. (ii) 128.5 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	954	418

S.E./mean =37.1 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 57(73).**

Site :- Agri. Res. Stn., Talod. **Type :- 'CM'.**

Object :—To find out a suitable method of cultivation for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Sandy. *Goradu.* (b) Refer soil analysis, Talod. (iii) 1.7.1957. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Bajra*—207. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 14.99″. (x) 22.9.1957.

2. TREATMENTS :

Same as in expt. no. 55(56) on page 218.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 41′×20′. (b) 36′×15′. (v) 2.5′×2.5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1004 lb./ac. (ii) 218.6 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	1120	889

S.E./mean =63.1 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 58(104).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To find out the optimum manurial and spacing requirements of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 17.7.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 1 interculturing. (ix) N.A. (x) 15.10.1958.

2. TREATMENTS :

Same as in expt. no. 58(116) on page 215.
N as A/S and P_2O_5 as Single Super applied on 13.8.1958.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 24′×18′. (b) 18′×9′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 984 lb./ac. (ii) 176.4 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
C_1	1077	954	930	988	901	943	1119
C_2	985	934	1018	979	850	1010	1077
C_3	1117	1022	821	987	942	926	1092
Mean	1060	970	923	984	898	960	1096
M_0	919	881	892				
M_1	1005	952	923				
M_2	1256	1077	954				

S.E. of any marginal mean =41.6 lb./ac.
S.E. of body of any table =72.0 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 59(103).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To find out the optimum manurial requirements of Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 7.7 1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 5 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) 28-15-2. (vii) Unirrigated. (viii) Nil. (ix) 25.98". (x) 22.10.1959.

2. TREATMENTS :

Same as in expt. no. 58(116) on page 215.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 24′×18′. (b) 18′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 534 lb./ac. (ii) 120.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
C_1	492	562	460	505	508	519	488
C_2	533	616	536	562	444	599	643
C_3	487	595	523	535	474	541	589
Mean	504	591	506	534	475	553	573
M_0	426	489	511				
M_1	498	627	534				
M_2	588	657	474				

S.E. of any marginal mean =28.5 lb./ac.
S.E. of body of any table =49.3 lb./ac.

Crop :- Bajra *(Kharif)*. **Ref :- Gj. 54(40).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To find out the optimum number of irrigations for Bajra.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 9.7.1954. (iv) (a) Harrowing. (b) Drilling. (c) 6 lb./ac. (d) 18″. (e) N.A. (v) 10 lb./ac. of N top dressed on 1.8.1954. 10 lb./ac. of manure mixture drilled with seed on 9.7.1954. (vi) *Bajra*-28—15 (vii) Irrigated. (viii) 2 interculturings (ix) N.A. (x) 12.10.1954.

2. TREATMENTS :

3 levels of irrigation : $I_0=0$, $I_1=1$ and $I_2=2$ irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) 66′×24′. (b) 60′×18′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Slight blister beetle attack. (iii) Grain yield. (iv) (a) 1954—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 329 lb./ac. (ii) 40.28 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	I_0	I_1	I_2
Av. yield	332	335	319

S.E./mean =18.00 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 55(68).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'M'.**

Object :— To study the effect of $ZnSO_4$ on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 26.6.1955. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 1′×1′. (e) —. (v) Nil. (vi) B—11. (vii) Unirrigated. (ix) 3 hand weedings and 1 interculturing. (x) 5.11.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of Zinc Sulphate : $Z_0=0$ and $Z_1=ZnSO_4$ applied; quantity—N.A.

(2) 3 levels of manure : $M_0=0$, $M_1=3$ C.L./ac. of F.Y.M. and $M_2=3$ C.L./ac. of F.Y.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5.

Sources of N and P are N.A.

3. DESIGN :

(i) R.B.D. Fact. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 18′×30′. (b) 12′×24′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield data. (iv) (a) 1955—1957 (b) 1st year of expt. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 990 lb./ac. (ii) 167.5 lb/ac. (iii) M effect is highly significant. Interaction M×Z is significant and Z effect is not significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	Mean
Z_0	859	886	1088	944
Z_1	774	943	1393	1037
Mean	816	914	1240	990

S.E. of M marginal mean =39.5 lb./ac.
S.E. of Z marginal mean =48.4 lb./ac.
S.E. of body of table =68.4 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 56(82).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'M'.**

Object :—To study the effect of $ZnSO_4$ on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 27.6.1956, transplanting on 2, 3.8.1956. (iv) (a) N.A. (b) Hand sowing, transplanting. (c)—. (d) 1′×1′. (e) 1. (v) Nil. (vi) *Nagli*—B-11. (vii) Unirrigated. (viii) 3 weedings. (ix) 108.69″. (x) 16.11.1956.

2. TREATMENTS :

Same as in expt. no. 55(68) on page 221.

3. DESIGN :

(i) R.B.D. Fact. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 18′×30′. (b) 12′×24′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield data. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1359 lb./ac. (ii) 241.1 lb./ac. (iii) Only M effect is highly significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	Mean
Z_0	1182	1169	1740	1364
Z_1	1147	1223	1696	1355
Mean	1165	1196	1718	1359

S.E. of M marginal mean =69.6 lb./ac.
S.E. of Z marginal mean =56.8 lb./ac.
S.E. of body of table =98.4 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 57(103).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'M'.**

Object :—To study the effect of $ZnSO_4$ on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 23.6.1957 and 13.7.1957. (iv) (a) 1 ploughing and 1 puddling. (b) Hand sowing, transplanting. (c)—. (d) 1′×1′. (e) 1. (v) Nil. (vi) *Nagli*—B-11. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 45.77″. (x) 5.11.1957.

2. TREATMENTS :

Same as in expt. no. 55(68) on page 221.

3. DESIGN :

(i) R.B.D. Fact. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 18′×30′. (b) 12′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Due to lack of sufficient rains growth was not satisfactory. (ii) Nil. (iii) Yield data. (iv) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (viii) Nil.

5. RESULTS :

(i) 1032 lb./ac. (ii) 122.3 lb./ac. (iii) Only M effect is significant. (iv) Av. yield of grain in lb./ac.

	M_0	M_1	M_2	Mean
Z_0	934	914	1204	1017
Z_1	980	933	1229	1047
Mean	957	924	1216	1032

S.E. of M marginal mean =35.3 lb./ac.
S.E. of Z marginal mean =28.8 lb./ac.
S.E. of body of table =49.9 lb./ac.

* * *

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 56(22).**
Site :- Agri. Res. Stn., Dohad. **Type :- 'CM'.**

Object :—To study the effect of two different methods of cultivation on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) 150 seers/ac. of G.N.C. (ii) (a) Medium brown. (b) Refer soil analysis, Dohad. (iii) 17.8.1955. (iv) (a) Preparatory tillage by local plough. (b) Transplanting. (c) —. (d) 12″ between rows and 6″ between plants. (e) As per treatments. (v) As per treatments. (vi) *Nagli* (local). (vii) Unirrigated. (viii) 1 interculturing. (ix) 32.50″. (x) 24.11.1955.

2. TREATMENTS

2 methods of cultivation :

(1) Departmental method : Basal dose—3 C.L./ac. of F.Y.M. Seed rate—1 seedling/bunch. N at 40 lb./ac. applied in two doses and P_2O_5 at 20 lb./ac. applied in one dose.
(2) Local method : Seed rate—2 to 3 seedlings/bunch.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 18′×30′. (b) 12′×24′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) The germination and general growth of the crop was normal. No seasonal abnormalities were observed. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Hatkhamba, Karjat, Vadgaon and Waghai. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1074 lb./ac. (ii) 309.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	1269	880

S.E./mean =89.3 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 58(13).**
Site :- Agri. Res. Stn., Dohad. **Type :- 'CM'.**

Object :—To study the effect of two different methods of cultivation on the yield of Nagli.

1. BASAL CONDITIONS

(i) (a) No. (b) Maize and gram. (c) N.A. (ii) (a) Light brown. *Goradu*. (b) Refer soil analysis. Dohad. (iii) N.A. (iv) (a) 2 ploughings. (b) Transplantings. (c) —. (d) 12″×6″. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) 46.62″. (x) N.A.

2. TREATMENTS :

Two methods of cultivation

(1) Departmental method : 40 lb./ac. of N as A/S in two doses : one at sowing and the other one month after transplanting. 20 lb./ac. of P_2O_5 as Super 15 days after transplanting.

(2) Local method : No manure. Cultural treatment N.A.

3. DESIGN .

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 30′×22′. (b) 28′×20′. (v) 1′ around. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 812 lb./ac. (ii) 110.1 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	989	635

S.E./mean =31.8 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 59(5).**
Site :- Agri. Res. Stn., Dohad. **Type :- 'CM'.**

Object :—To study the effect of two different methods of cultivation on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Medium black (Rocky type). (b) Refer soil analysis, Dohad. (iii) 20.8.1959. (iv) (a) One ploughing and one harrowing. (b) Transplanting. (c)—. (d) 12″×6″. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 2 weedings. (ix) 36.62″. (x) 21.11.1959.

2. TREATMENTS :

1. Departmental method :
   (i) 40 lb./ac. of N as A/S in two doses : one at sowing and the other one month after transplanting.
   (ii) 20 lb./ac. of P_2O_5 as Super 15 days after transplanting.
2. Local method : No manure.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 18′×33′. (b) 12′×24′. (v) 3′×4.5′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 680 lb./ac. (ii) 99.92 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	813	548

S.E./mean =28.85 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 55(66).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To study the effect of two different methods of cultivation on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) G.M. (ii) (a) Light with reddish colour. (b) N.A. (iii) 26.6.1955/30.7.1955. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 12″×6″. (e) 1. (v) Nil. (vi) *Nagli* A-16. (vii) Unirrigated. (viii) Weedings. (ix) 85″. (x) 5.11.1955.

2. TREATMENTS :

2 methods of cultivation

(1) Departmental method : Basal dose—3 C.L./ac. of F.Y.M. 40 lb./ac. of N applied in two doses and 20 lb./ac. of P_2O_5 applied in single dose.

(2) Local method : No manure.

Details of cultural treatment N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 36′×18′. (b) 34′×16′. (v) 1′ around. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Mild attack of Piricularia. (iii) Grain yield. (iv) (a) 1955-1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1187 lb./ac. (ii) 144.8 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	963	1412

S.E./mean =41.8 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 56(80).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To study the effect of two different methods of cultivation on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 30.6.1956/3 and 4.8.1956. (iv) (a) N.A. (b) Transplanting. (c) As per treatments. (d) As per treatments. (e) 1. (v) Nil. (vi) *Nagli* (local). (vii) Unirrigated. (viii) 2 weedings. (ix) 108.69″. (x) 9.11.1956.

2. TREATMENTS :

2 methods of cultivation

(1) Departmental method : Basal dose—3 C.L./ac. of F.Y.M. ; 40 lb./ac. of N in two equal doses and 20 lb./ac. of P_2O_5 as Super in one dose. Seed rate 4 lb./ac. and spacing 12″×6″.

(2) Local method : No manure. Details of cultural treatment N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 36′×18′. (b) 34′×16′. (v) 1′ around. (vi) Yes.

4, GENERAL

(i) Crop growth good. (ii) Nil. (iii) Grain yield (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1287 lb./ac. (ii) 160.7 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	1554	1020

S.E./mean =46.4 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 57(101).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To study the effect of two different methods of cultivation on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 5 C.L./ac. of F.Y.M.+G.M.+100 lb./ac. of N+80 lb./ac. of P_2O_5. (ii) (a) Light and reddish colour. (b) N.A. (iii) 23.6.1957/13, 15.7.1957. (iv) (a) 2 ploughings and 1 puddling. (b) Hand sowing. (c) and (d) As per treatments. (e) 1. (v) Nil. (vi) *Nagli* B—11. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 78.77″. (x) 6.11.1957.

2. TREATMENTS :

Two methods of cultivation :

(1) Local method : No particular spacing.

(2) Departmental method : 3 C.L./ac. of F.Y.M.+40 lb./ac. of N in two doses as A/S+20 lb./ac. of P_2O_5 in single dose as Super, seed rate 4 lb./ac., spacing 12″×6″.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) 36′×36′. (iii) 12. (iv) (a) 36′×18′. (b) 34′×16′. (v) 1′ around. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield, tillers, plant height flowering date and no. of grains per earhead. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1114 lb./ac. (ii) 106.3 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	1018	1211

S.E./mean =30.7 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 58(67).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To study the effect of two different methods of cultivation on the yield of Nagli.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 23.6.1958/20, 21.7.1958. (iv) (a) 2 ploughings and 1 puddling. (b) Hand sowing. (c) and (d) As per treatments. (e) 1. (v) Nil. (vi) *Nagli* B-11. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 93.85″ (85.27″ in July, Aug. and Sept). (x) 13.11.1958.

2. TREATMENTS

Two methods of cultivation :

(1) Local method—Without any particular spacing.

(2) Departmental method : 3 C.L./ac. of F.Y.M.+40 lb./ac. N in two doses as A/S+20 lb./ac. of P_2O_5 as Super in a single dose, spacing 12″×6″, seed rate 4 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 36′×18′. (b) 34′×16′. (v) 1′ alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield, height of plant and no. of tillers. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 706 lb./ac. (ii) 77.25 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2
Av. yield	580	833

S.E./mean =22.3 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 55(67).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To find out proper spacing and economic dose of manure for Nagli.

1. BASAL CONDITIONS :

(i) (a) Paddy-*Nagli*. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 26.6.1955, transplanting on 5.8.1955. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) 1. (v) Nil. (vi) *Nagli* B-11. (vii) Unirrigated. (viii) 3 weedings. (ix) 85″. (x) 22.11.1955.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 4 spacings : $S_1=6''\times6''$, $S_2=9''\times6''$, $S_3=12''\times6''$ and $S_4=15''\times6''$.

(2) 2 manures : M_1=G.M. and M_2=3 C.L./ac. of F.Y.M.

Sub-plot treatments :

6 doses of fertilizers : $F_0=0$, $F_1=20$, $F_2=40$ and $F_3=60$ lb./ac. of N as A/S ; $F_4=40$ lb./ac. of N +20 lb./ac. of P_2O_5 and $F_5=60$ lb./ac. of N+20 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15′×26′. (b) 10′×20′ and for S_1, S_3 and S_4 and 9′×22′ for S_2. (v) 2.5′×3′ for S_1, S_3 and S_4 and 3′×2′ for S_2. (vi) Yes.

4. GENERAL :

(i) Growth satisfactory. (ii) Attack of Piricularia on seedlings was observed. (iii) Grain yield. (iv) (a) 1955—1958. (b) This is the first year of the expt. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1065 lb./ac. (ii) (a) 290.4 lb./ac. (b) 206.8 lb./ac. (iii) F effect is highly significant. Interactions S×F, S×M and S×M×F are significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean	M_1	M_2
F_0	714	770	717	819	755	693	817
F_1	1158	700	1053	770	920	1117	724
F_2	1190	913	1361	1320	1196	1316	1077
F_3	1323	1512	972	1146	1238	1076	1401
F_4	1357	895	1312	1232	1199	1217	1182
F_5	956	1113	1211	1053	1083	1125	1043
Mean	1116	984	1104	1057	1065	1091	1040
M_1	1235	970	1007	1151			
M_2	996	999	1202	964			

S.E. of difference of two

1. S marginal means = 59.3 lb./ac.
2. M marginal means = 41.9 lb./ac.
3. F marginal means = 51.7 lb./ac.
4. F means at the same level of S =103.4 lb./ac.
5. S means at the same level of F =111.4 lb./ac.
6. F means at the same level of M = 73.1 lb./ac.
7. M means at the same level of F = 78.8 lb./ac.

S.E. of body of S×M table = 59.3 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 56(81).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To find out proper spacing and economic dose of manure for Nagli.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Nagli*. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 30.6.1956. Transplanting on 4 and 5.8.1956. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) one. (v) Nil. (vi) *Nagli* B—11. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 17, 18 and 19.11.1956.

2. TREATMENTS :

Same as in expt. no 55(67) on page 227.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 15′×26′. (b) 10′×20′, for S_1, S_3 and S_4 and 9′×22′ for S_2. (v) 2.5′×3 for S_1, S_3 and S_4 and 3′×2′ for S_2. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1958· (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1251 lb./ac. (ii) (a) 296·5 lb./ac. (b) 196·0 lb./ac. (iii) Only F and S effects are significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean	M_1	M_2
F_0	1014	860	994	708	894	853	935
F_1	1137	1079	1048	886	1038	1017	1059
F_2	1484	1381	1307	1103	1319	1362	1276
F_3	1539	1444	1606	1375	1491	1474	1508
F_4	1477	1354	1266	1082	1295	1293	1297
F_5	1763	1258	1491	1369	1470	1385	1556
Mean	1402	1229	1285	1087	1251	1231	1271
M_1	1343	1240	1214	1126			
M_2	1461	1219	1357	1048			

S.E. of difference of two

1. S marginal means = 85.6 lb./ac.
2. M marginal means = 60.5 lb./ac.
3. F marginal means = 69.3 lb./ac.
4. F means at the same level of S =138.6 lb./ac.
5. S means at the same level of F =152.7 lb./ac.
6. F means at the same level of M = 98·0 lb./ac.
7. M means at the same level of F =108.0 lb./ac.

S.E. of body of S×M table = 85.6 lb./ac.

Crop :- Nagli *(Kharif)*. **Ref :- Gj. 57(102).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To find out proper spacing and economic dose of manure for Nagli.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Nagli*. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 23.6.1957. 20 and 21.7.1957 (iv) (a) 2 ploughings and 2 puddlings. (b) Hand sowing. (c) N.A. (d) As per treatments. (e) 1. (v) Nil. (vi) *Nagli* B—11. (vii) Unirrigated. (ix) 48.77". (x) 8 and 9.11.1957.

2. TREATMENTS :

Same as in expt. no. 55(67) on page 227.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 sub-plots/main-plot and 8 main-plots/replication. (b) 104'×180' (iii) 2. (iv) (a) 15'×26'. (b) 10'×20' for S_1, S_3 and S_4 and 9'×22' for S_2. (v) 2.5'×3' for S_1, S_3 and S_4 and 3'×2' for S_2. (vi) Yes.

4. GENERAL :

(i) Satisfactory growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1142 lb./ac. (ii) (a) 277.8 lb./ac. (b) 221.6 lb./ac. (iii) Only F effect is highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean	M_1	M_2
F_0	708	500	789	680	669	660	679
F_1	1021	829	864	865	895	875	915
F_2	1463	1191	1157	1102	1228	1161	1296
F_3	1701	1626	1306	1366	1499	1555	1443
F_4	1225	1238	1102	1137	1176	1160	1191
F_5	1388	1484	1218	1457	1387	1436	1337
Mean	1251	1145	1073	1101	1142	1141	1144
M_1	1264	1178	1076	1048			
M_2	1239	1113	1071	1153			

S.E. of difference of two

1. S marginal means = 80.2 lb./ac.
2. M marginal means = 56.6 lb./ac.
3. F marginal means = 78.3 lb./ac.
4. F means at the same level of S =156.7 lb./ac.
5. F means at the same level of M =110.8 lb./ac.
6. S means at the same level of F =163.9 lb./ac.
7. M means at the same level of F =115.9 lb./ac.

S.E. of body of S×M table = 80.2 lb./ac.

Crop :- Nagli ***(Kharif).*** **Ref :- Gj. 58(68).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To find out proper spacing and economic dose of manure for Nagli.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Nagli*. (b) Paddy. (c) Nil. (ii) (a) Light with reddish colour. (b) N.A. (iii) 23.6.1958. Transplanting on 26, 27.7.1958. (iv) (a) 1 ploughing and 1 puddling. (b) Hand sowing. (c) N.A. (d) As per treatments. (e) 1. (v) Nil. (vi) B—11. (vii) Unirrigated. (viii) 2 weedings. (ix) 92.97".(x) 14.11.1958 and 18.11.1958.

2. TREATMENTS :

Same as in expt. no. 55(67) on page 227.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 sub-plots/main-plot and 8 main-plots/replication. (b) N.A. (iii) 2. (iv) (a) 15′×26′. (b) 10′×20′ for S_1, S_3 and S_4 and 9′×22′for S_2. (v) 2.5′×3′ for S_1, S_3 and S_4 and 3′×2′ for S_2. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1428 lb./ac. (ii) (a) 249.4 lb./ac. (b) 245.2 lb./ac. (iii) Only F effect is highly significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean	M_1	M_2
F_0	1031	799	994	833	914	929	900
F_1	1310	1114	1079	1134	1159	1272	1047
F_2	1665	1381	1514	1401	1489	1503	1475
F_3	1822	1612	2018	1626	1769	1896	1643
F_4	1548	1506	1647	1422	1531	1682	1380
F_5	1765	1646	1703	1709	1706	1671	1741
Mean	1523	1343	1492	1354	1428	1492	1364
M_1	1583	1451	1604	1329			
M_2	1462	1236	1380	1380			

S.E. of difference of two

1.	S marginal means	= 72.0 lb./ac.	5.	F means at the same level of M =122.6 lb./ac.
2.	M marginal means	= 50.9 lb./ac.	6.	S means at the same level of F =173.9 lb./ac.
3.	F marginal means	= 86.7 lb./ac.	7.	M means at the same level of F =122.9 lb./ac.
4.	F means at the same level of S	=173.4 lb./ac.		S.E. of body of S×M table = 72.0 lb.lac.

Crop :- Banti (hill millet) ***(Kharif).*** **Ref :- Gj. 54(51).**

Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the sulphur requirement for Banti crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Salty soil. (b) Refer soil analysis, Harij. (iii) 24.7.1954. (iv) (a) 2 ploughings and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Hill millet. (vii) Unirrigated. (viii) Nil. (ix) 18″. (x) 17.10.1954.

2. TREATMENTS :

3 levels of sulphur : $S_0=0$, $S_1=\frac{1}{4}$ and $S_2=\frac{1}{2}$ ton/ac.
Sulphur applied on 22.7.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 33′×16½′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 283.3 lb./ac. (ii) 93.72 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain inlb./ac.

Treatment	S_0	S_1	S_2
Av. yield	275	255	320

S.E./mean =46.86 lb./ac.

Crop :- Banti (hill millet) *(Kharif)*. **Ref :- Gj. 54(52).**

Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the gypsum requirement for Banti crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Salty soil. (b) Refer soil analysis, Harij. (iii) 24.7.1954. (iv) (a) 2 ploughings and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Hill millet. (vii) Unirrigated. (viii) N.A. (ix) 18″. (x) 17.10.1954.

2. TREATMENTS :

3 levels of gypsum : $G_0=0$, $G_1=\frac{1}{2}$ and $G_2=1$ ton/ac.
Gypsum applied on 22.7.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 33′×16½′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 366.6 lb./ac. (ii) 57.84 lb./ac. (iii) Treatments differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	G_0	G_1	G_2
Av. yield	265	375	460

S.E./mean =28.92 lb./ac.

Crop :- Banti *(Kharif)*. **Ref :- Gj. 58(35).**

Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To study the residual effect of gypsum and F.Y.M. on Banti crop.

1. BASAL CONDITIONS :

(i) (a) *Banti—Banti.* (b) *Banti.* (c) As per treatments. (ii) (a) Salty soil. (b) Refer soil analysis, Harij. (iii) 16.8.1958. (iv) (a) 1 harrowing and 1 ploughing. (b) Drilling. (c) 10 lb./ac. (d) 12″×1″. (e) N.A. (v) Nil. (vi) Hill millet. (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) 14″. (x) 24.10.58.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 5 levels of gypsum : $G_0=0$, $G_1=\frac{1}{2}$, $G_2=1$, $G_3=1\frac{1}{2}$ and $G_4=2$ ton/ac.
(2) 2 levels of F.Y.M. : $M_0=0$ and $M_1=10$ C.L./ac.
Manures applied to the previous *Banti* crop.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 21′×36′. (b) 15′×30′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 696.5 lb./ac. (ii) 121.5 lb./ac. (iii) Interaction G×M alone is significant. (iv) Av. yield of grain in lb./ac.

	G_0	G_1	G_2	G_3	G_4	Mean
M_0	585	720	689	711	730	687
M_1	842	650	578	723	738	706
Mean	714	685	633	717	734	697

S.E. of marginal mean of G =42.9 lb./ac.
S.E. of marginal mean of M =27.2 lb./ac.
S.E. of body of table =60.7 lb./ac.

Crop :- Chinamug *(Kharif)*. **Ref :- Gj. 54(21).**
Site :- Agri. Res. Stn., Bhuwa. **Type:- 'M'.**

Object :—To study the effect of leguminous crop grown with and without Super on the succeeding Jowar.

1. BASAL CONDITIONS :

(i) (a) *Chinamug—Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 22.6.1954. (iv) (a) N.A. (b) Drilling. (c) 18 lb./ac. (d) Between rows—24″ ; between plants—irregular. (e) N.A. (v) Nil. (vi) *Chinamug* (early). (vii) Unirrigated. (viii) Nil. (ix) 29.31″. (x) 21.9.1954.

2. TREATMENTS :

1. No P_2O_5.
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *kharif* and sown in *Rabi* ; manured with 10 C.L./ac. of F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48′×30′. (b) 36′×18′. (v) 6′ round the net plot. (vi) Yes.

4. GENERAL :

(i) Poor due to heavy rains in August 1954. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948 *(kharif)* —1954 *(rabi)*. (b) and (c) No. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 85 lb./ac. (ii) 49.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	71	80	96	93

S.E./mean =22.2 lb./ac.

Crop :- Chinamug *(Kharif)*. **Ref :- Gj. 56(127).**
Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the direct effect of P_2O_5 on Mug and its residual effect on wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 16.7.1956. (iv) (a) Nil. (b) Drilling. (c) 12 lb./ac. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) *Mug*-Marathawada. (vii) Unirrigated. (viii) One weeding. (ix) N.A. (x) 22.9.1956.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 16 lb./ac. of P_2O_5 every year.
3. 16 lb./ac. of P_2O_5 alternate year.
4. 32 lb./ac. of P_2O_5 every year.
5. 32 lb./ac. of P_2O_5 alternate year.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 40′×16.25′. (b) 34′×9′. (v) 3′×3½′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of surface grass-hoppers. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 318 lb./ac. (ii) 43.56 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2+3	4+5
Av. yield	249	302	369

S.E. of control *vs* other treatment means =26.68 lb./ac.

Crop :- Chinamug *(Kharif)*. **Ref :- Gj. 57(126).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the direct effect of P_2O_5 applied to Mug and its residual effect on succeeding Wheat.

1. BASAL CONDITIONS :

(i) (a) *Mug*—Wheat. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 4.7.1957. (iv) (a) Nil. (b) Drilling. (c) 12 lb./ac. (d) 18″×3″ to 4″. (e) —. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) One weeding. (ix) 15.09″. (x) 12.9.1957.

2. TREATMENTS :

Same as in expt. no. 56(127) on page 232.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 321 lb./ac. (ii) 70.82 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	341	267	345	342	310

S.E./mean =35.41 lb./ac.

Crop :- Chinamug *(Kharif)*. **Ref :- Gj. 58(20).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the direct effect of P_2O_5 on Mug and its residual effect on succeeding Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 16.7.1958. (iv) (a) 2 ploughings ; 2 harrowings. (b) Drilling. (c) 8 lb./ac. (d) 18″ between rows. (v) Nil. (vi) *Mug*—(Marathawada). (vii) Irrigated. (viii) 2 interculturings. (ix) 13″. (x) 24.9.1958.

2. TREATMENTS:

Same as in expt. no. 56(127) on page 232.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 365.6 lb./ac. (ii) 34.07 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5
Av. yield	359	347	342	395	385

S.E./mean =17.03 lb./ac.

Crop :- Chinamug *(Kharif)*. **Ref :- Gj. 59(10).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the direct effect of P_2O_5 on Mug and its residual effect on succeeding Wheat.

1. BASAL CONDITIONS :

(i) (a) *Mug*—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 6.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 25 lb./ac. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) *Mug*—Marathawada—(early). (vii) Unirrigated. (viii) 1 weeding and 3 interculturings. (ix) 34″. (x) 25 and 26.9.1959.

2. TREATMENTS :

Same as in expt. no. 56(127) on page 232.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 51′×18′ (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Excellent germination. Crop damaged by rain. (ii) Slight attack of grass-hoppers, aphids and pod borers. (iii) Pod yield. (iv) (a) 1957—N.A. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

164 lb./ac. (ii) 40.33 lb./ac. (iii) Treatments differ significantly. (iv) Av. yield of pod in lb./ac.

Treatment	1	2	3	4	5
Av. yield	129	146	158	232	157

S.E./mean =20.16 lb./ac.

Crop :- Gram. **Ref :- Gj. 54(4).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To study the N, P and K requirements of Gram.

1. BASAL CONDITIONS :

(i) (a) Wheat—Gram. (b) Wheat. (c) Nil. (ii) (a) Medium to deep black. (b) Refer soil analysis, Arnej. (iii) 23.10.1954. (iv) (a) 5 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. on 23.10.1955. (vi) *Chafa* (medium). (vii) Unirrigated. (viii) Weeding. (ix) 24.10″. (x) 25.2.1955.

2. TREATMENTS :

1. Control.
2. 20 lb./ac. of N as A/S and G.N.C. (1 : 1).
3. 20 lb./ac. of P_2O_5 as Super.
4. 40 lb./ac. of K_2O as K_2SO_4.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 90′×6′. (b) 81.5′×4′. (v) 4¼′×1′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) and (iii) Nil. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and(b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 356.3 lb./ac. (ii) 74.63 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	360.3	347.0	382.6	335.4

S.E./mean =30.46 lb./ac.

Crop :- Gram. **Ref :- Gj. 55(2).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To study the N, P and K requirements of Gram.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) (a) Medium to deep black. (b) Refer soil analysis, Arnej. (iii) 10.11.1955. (iv) (a) N.A. (b) Drilling. (c) 12″ between rows. (d) 20 lb./ac. (e) N.A. (v) F.Y.M. was given—Amount N.A. (vi) *Chafa*. (vii) Unirrigated. (viii) 2 hoeings. (ix) 26.10″. (x) 6.3.1956.

2. TREATMENTS : and 3. DESIGN :

Same as in expt. no. 54(4) on page 234.

4. GENERAL :

(i) Below normal due to heavy rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 177.2 lb./ac. (ii) 28.15 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	188.4	180.4	170.1	170.1

S.E./mean =11.49 lb./ac.

Crop :- Gram ***(Rabi)*****.** **Ref :- Gj. 56(1).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To study the N, P and K requirements of Gram.

1. BASAL CONDITIONS :

(i) (a) Wheat—Gram. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 27.10.1956. (iv) (a) 5 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. broadcast in September (vi) *Chafa* (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) 39″. (x) 18.2.1957.

2. TREATMENTS :

Same as in expt. no. 54(4) on page 234.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 45′×12′. (b) 40′×10′. (v) 2.5′×1′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Nil. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Due to heavy rains no adequate tillage operations were done and hence low yield. (vii) Nil.

5. RESULTS :

(i) 441.4 lb./ac. (ii) 67.99 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	500.9	432.2	412.6	419.8

S.E./mean =27.76 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :-Gj. 59(47).**

Site :-Agri. Res. Stn., Arnej. **Type :- 'M'.**

Object :—To study the effects of N and P on Gram.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 8.11.1959. (iv) (a) 4 harrowings. (b) Drilling. (c) 20 lb./ac. (d) 12″ between rows. (e) N.A. (v) Nil. (vi) *Chafa.* (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 11.3.1960.

2. TREATMENTS :

1. Control
2. 5 lb./ac. of N as A/S.
3. 20 lb./ac. of P_2O_5 as Super.
4. 5 lb./ac. of N+20 lb./ac. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 36′×27′. (b) 30′×21′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Yield was poor due to late sowing. (vii) Nil.

5. RESULTS :

(i) 288 lb./ac. (ii) 91.89 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	255	316	247	335

S.E./mean =37.52 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 55(97).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of N and P on Gram.

1. BASAL CONDITIONS :

(i) (a) Nil (b) *Bajra*. (c) 200 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 12.11.1955. (iv) (a) 1 ploughing, 2 harrowings. (b) Drilling. (c) N.A. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 4.3.1956.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=18$ and $P_2=36$ lb./ac. of P_2O_5.

(2) 2 levels of N as A/S : $N_0=0$ and $N_1=20$ lb/ac. of N.

P_2O_5 as Single Super applied at sowing and N as A/S on 26.12.1955.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 16.5′×33′. (b) 13.5′×27′. (v) 1.5′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 581 lb./ac. (ii) 48.10 lb./ac. (iii) Main effects of P and N are highly significant. Interaction N×P is not significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean
N_0	441	548	635	541
N_1	508	688	669	622
Mean	474	618	652	581

S.E. of P marginal mean =17.01 lb./ac.
S.E. of N marginal mean =13.89 lb./ac.
S.E. of body of table =24.05 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 56(108).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of N and P on Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) 20 lb./ac. of N as manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 1.12.1956. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.3.1957.

2. TREATMENTS : and 3. DESIGN :

Same as in expt. no. 55(97) on page 236.
Manures were applied at the time of sowing.

4. GENERAL :

(i) Normal (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 748 lb./ac. (ii) 75.65 lb./ac. (iii) Main effects of P and N are highly significant. Interaction N×P is not significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean
N_0	606	739	760	702
N_1	693	785	905	794
Mean	649	762	832	748

S.E. of P marginal mean =26.75 lb./ac.
S.E. of N marginal mean =21.84 lb./ac.
S.E. of body of table =37.82 lb./ac.

Crop :- Gram ***(Rabi).*** **Ref :- Gj. 57(81).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of N and P on Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar.* (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 13.11.1957. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) *Chafa* (medium). (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 27.2.1958.

2. TREATMENTS : and 3. DESIGN :

Same as in expt. no. 55(97) on page 236.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of pods, no. of branches and grain yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 393 lb./ac. (ii) 57.54 lb./ac. (iii) Main effect of N is highly significant. Main effect of P and interaction N×P are significant. (iv) Av. yield of grain in lb./ac.

	P_0	P_1	P_2	Mean
N_0	295	319	343	319
N_1	485	406	511	467
Mean	390	363	427	393

S.E. of P marginal mean =20.34 lb./ac.
S.E. of N marginal mean =16.61 lb./ac.
S.E. of body of table =28.77 lb./ac.

Crop :- Gram ***(Rabi).*** **Ref :- Gj. 55(59).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the effects of different micro-nutrients on the yield of Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat in *Rabi*—Jowar in *Kharif.* (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 20.11.1955. (iv) (a) N.A. (b) Dibbling. (c) 30 lb./ac. (d) and (e) N.A. (v) 10 lb./ac. of N as A/S on 20.11.1956 ; 50 lb./ac. of P_2O_5 as Super on 19.11.1956. (vi) Local. (vii) Irrigated. (viii) Micro-nutrients were sprayed on 12.1.1956. (ix) Nil. (x) 11.3.1956.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

1. 2 levels of Zinc (Zn) as $ZnSO_4$: A_0=0 and A_1=$ZnSO_4$ at 9 lb.+Lime at 2 lb.+100 gallons of water.
2. 2 levels of Manganese (Mn) as $MnSO_4$: B_0=0, B_1=$MnSO_4$ at 3 lb.+Lime at 2 lb.+100 gallons of water.
3. 2 levels of Copper (Cu) as $CuSO_4$: C_0=2, C_1=$CuSO_4$ at 8 lb.+Lime at 8 lb.+100 gallons of water.
4. 2 levels of Molybdenum (Mo) as Sodium Molybdate+$CaCO_3$: D_0=0 and D_1=Sodium Molybdate at 3 oz.+100 gallons of water.
5. 2 levels of Boron (B) as Borax : E_0=0 and E_1=Borax at 2 lb.+Bentonite at 0.5 lb.+100 gallons of water.

Total quantity of foliar spray is 100 gallons/ac. All sprays contain 3½ pints of Tenac (Burmah-Shell) per 100 gallons as spreader and sticker.

3. DESIGN :

(i) 2^5 fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 20′×12′. (b) 16′×8′. (v) 2′×2′. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Nil. (iii) Grain and fodder yield. Av. height of plant in each plot. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 2025 lb./ac. (ii) 481.5 lb./ac. (iii) Main effect of Cu and interactions Zn×Mn and Zn×Mo are significant. Other effects are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	−6.9	—	—	−239.3	225.4	70.5	−84.3	166.8	−180.7	101.9	−115.7
Mn	−18.6	−251.0	213.7	—	—	−145.4	108.1	46.7	−83.9	−14.7	−22.5
Cu	−233.7	−156.3	−311.2	−360.5	−107.0	—	—	−262.6	−206.0	−153.8	−313.7
Mo	147.0	320.7	−26.8	212.3	81.7	118.1	174.7	—	—	236.7	57.2
B	−56.7	52.1	−165.5	−52.7	−60.6	23.3	−13.6	33.1	−146.4	—	—

S.E. of mean response = 85.1 lb./ac.
S.E. of differential response =120.4 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 56(70).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the effects of different micro-nutrients on the yield of Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 20.11.1956. (iv) (a) N.A. (b) Broadcasting. (c) 30 lb./ac. (d) 12″ between rows. (e) N.A. (v) 50 lb./ac. of P_2O_5 as Super and 10 lb./ac. of N as A/S. (vi) Local. (vii) Irrigated. (viii) Nil. (ix) Nil. (x) 5.4.1957.

2. TREATMENTS :

Same as in expt. no. 55(59) on page 238.

3. DESIGN :

(i) 2^5 fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 16′×14′. (b) 12′×10′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 848 lb./ac. (ii) 400.8 lb./ac. (iii) None of the effects is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	78.5	—	—	85.5	71.6	168.9	−11.8	148.8	8.3	81.3	75.8
Mn	64.5	71.4	57.5	—	—	115.1	13.8	83.7	45.2	170.3	−41.3
Cu	−33.8	56.5	−124.2	16.8	−84.5	—	—	−64.0	−3.7	−45.2	−22.4
Mo	−71.8	−1.6	−142.1	−52.6	−91.1	−102.0	−41.7	—	—	−129.9	−13.8
B	13.1	15.9	10.3	118.9	−92.7	1.7	24.5	−44.9	71.1	—	—

S.E. of mean response =70.86 lb./ac.
S.E. of differential response =100.2 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 57(93).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on the yield of Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 13.11.1957. (iv) (a) 4 ploughings and 4 harrowings. (b) Drilling. (c) 30 lb./ac. (d) 12″ between rows. (e) N.A. (v) 10 lb./ac. of N as A/S broadcast and 50 lb./ac. of P_2O_5 as Super. (vi) Local. (vii) Irrigated. (viii) One interculturing. (ix) About 17″. (x) 7.3.1958 to 9.3.1958.

2. TREATMENTS :

Same as in expt. no. 55(59) on pages 238.

3. DESIGN :

Same as in expt. no. 56(70) on page 239.

4. GENERAL :

(i) Normal. (ii) Nil. Dusting with 10% of Gammexane. (iii) Grain and fodder yield, germination, flowering, plant height and root study. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 735 lb./ac. (ii) 185.8 lb./ac. (iii) Interaction Mn×Mo alone is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	−14.4	—	—	−14.5	−14.4	18.7	−47.6	12.6	−41.5	4.2	−33.1
Mn	−1.0	−1.0	−0.9	—	—	5.1	−7.0	−67.0	65.1	−6.9	5.0
Cu	25.2	58.4	−7.9	31.3	19.2	—	—	70.9	−20.4	47.7	2.7
Mo	−23.1	4.0	−50.1	−89.1	43.0	22.6	−68.7	—	—	1.5	−47.6
B	−19.9	−1.2	−38.5	−25.8	−13.9	2.6	−42.4	4.6	−44.4	—	—

S.E. of mean response =32.85 lb./ac.
S.E. of differential response =46.45 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 58(60).**

Site :- Agri. Res. Stn., Vijapur. **Type :- 'M'.**

Object :—To study the effect of different micro-nutrients on the yield of Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) 3 C.L./ac. of F.Y.M. (ii) (a) Sandy loam. (b) N.A. (iii) 7.11.1958. (iv) (a) Three ploughings and 2 harrowings. (b) Drilling. (c) 30 lb./ac. (d) 12″ between rows. (e) N.A. (v) 10 lb./ac. of N as A/S and 50 lb./ac. of P_2O_5 as Super on 6.11.1958. (vi) Local. (vii) Irrigated. (viii) One interculturing. (ix) 25.77″. (x) 15.3.1959/16.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(70) on page 239.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield, plant height, length and breadth. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 687 lb./ac. (ii) 158.2 lb./ac. (iii) None of the effects is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	4.76	—	—	22.11	−12.59	21.89	−12.37	−19.06	28.58	−44.92	54.44
Mn	42.99	60.34	25.64	—	—	14.63	71.35	19.51	66.47	−10.66	96.64
Cu	−25.98	−8.85	−43.11	−54.34	2.38	—	—	−34.94	−17.02	−27.68	−24.28
Mo	18.15	−5.67	41.97	−5.33	41.63	9.19	27.11	—	—	36.98	−0.68
B	18.38	−31.30	68.06	−35.27	72.03	16.68	20.08	37.21	−0.45	—	—

S.E. of mean response =27.97 lb./ac.
S.E. of differential response =39.55 lb./ac.

* * *

Crop :- Gram *(Rabi)*. **Ref :- Gj. 56(106).**

Site :. Agri. Res. Stn., Umrala. **Type :- 'MV'.**

Object :—To study the performance of different varieties of Gram with different doses of phosphatic manures.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analyis, Umrala. (iii) 20.11.1956. (iv) (a) Nil. (b) Drilling. (c) N.A. (d) 18″ between rows. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13.3.1957.

2. TREATMENTS :

Main-plot treatments :

6 varieties : V_1=Chandere—24, V_2=B. G. 482, V_3=Sandarpur—21, V_4=Gram—707, V_5=*Chafa* and V_6=Local.

Sub-plot treatments :

3 doses of manures : $P_0=0$, $P_1=27$, $P_2=54$ lb./ac. of P_2O_5 as Single Super applied in furrows at the time of sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 34′×12′. (q) 28′×9′. (v) 3′×1.5′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Pod yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 587 lb./ac. (ii) (a) 96.63 lb./ac. (b) 78.48 lb./ac. (iii) Main effect of V is significant. None of the other effects is significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
P_0	481	494	615	389	732	569	547
P_1	650	550	729	434	722	565	608
P_2	563	555	659	553	748	563	607
Mean	565	533	668	459	734	566	587

S.E. of difference of two

1. V marginal means	=55.79 lb./ac.
2. P marginal means	=32.04 lb./ac.
3. P means at the same level of V	=78.48 lb./ac.
4. V means at the same level of P	=84.96 lb./ac.

Crop :- Gram *(Rabi).* **Ref :- Gj. 57(82).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'MV'.**

Object :—To study the performance of different varieties of Gram with different doses of phosphatic manures.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 2.11.1957. (iv) (a) Two harrowings. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 28.2.1958.

2. TREATMENTS :

Same as in expt. no. 56(106) on page 241.

3. DESIGN:

(i) Split-plot. (ii) (a) 6 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 12'×18'. (b) 9'×15'. (v) $1\frac{1}{2}'\times1\frac{1}{2}'$. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Average number of pods, wt. of pods/plant, no. of grains/plant and grain yield. (iv) (a) 1956—57. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 548 lb./ac. (ii) (a) 112.1 lb./ac. (b) 134.6 lb./ac. (iii) Main effect of P is highly significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
P_0	508	502	416	515	361	416	453
P_1	677	529	565	623	564	494	575
P_2	618	593	510	610	739	631	617
Mean	601	541	497	583	555	514	548

S.E. of difference of two

1. V marginal means = 52.8 lb./ac.
2. P marginal means = 44.9 lb./ac.
3. P means at the same level of V =109.3 lb./ac.
4. V means at the same level of P =104.0 lb./ac.

Crop :- Gram. **Ref :- Gj. 54(5).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'C'.**

Object :—To find out a suitable spacing and economic seed rate for Gram.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium to deep black. (b) Refer soil analysis, Arnej. (iii) 22.10.1954. (iv) (a) 5 harrowings. (b) Drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Chafa* (medium). (vii) Unirrigated. (viii) Nil. (ix) 24.10″. (x) 5.3.1955.

2. TREATMENTS :

Main-plot treatments :

3 spacings : $S_1=12''$, $S_2=15''$ and $S_3=18''$.

Sub-plot treatments :

3 seed rates : $R_1=20$, $R_2=30$ and $R_3=40$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 32′×18′ for S_1, 32½′×18′ for S_2 and 33′×18′ for S_3. (b) 30′×16′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) and (iii) Nil. (iv) (a) 1953—N.A. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil

5. RESULTS :

(i) 317 lb./ac. (ii) (a) 61.71 lb./ac. (b) 49.01 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	338	287	294	306
R_2	323	332	348	334
R_3	290	312	332	311
Mean	317	310	324	317

S.E. of difference of two

1. S marginal means =20.53 lb./ac.
2. R marginal means =16.33 lb./ac.
3. R means at the same level of S =28.28 lb./ac.
4. S means at the same level of R =35.49 lb./ac.

Crop :- Gram. **Ref :- Gj. 55(3).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'C'.**

Object :—To find out a suitable spacing and economic seed rate for Gram.

1. BASAL CONDITIONS :

(i) (a) Wheat—Gram. (b) Wheat. (c) Nil. (ii) (a) Medium to deep black. (b) Refer soil analysis, Arnej. (iii) 27.10.1955. (iv) (a) 6 harrowings. (b) Drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) Weeding. (ix) 26.10″. (x) 24.2.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(5) on page 243.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Weight of grain. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 246 lb./ac. (ii) (a) 26.32 lb./ac. (b) 29.95 lb./ac. (iii) Effect S alone is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	262	231	232	242
R_2	250	240	249	246
R_3	270	230	248	249
Mean	261	234	243	246

S.E. of difference of two

1. S marginal means = 8.77 lb./ac.
2. R marginal means = 9.97 lb./ac.
3. R means at the same level of S =17.29 lb./ac.
4. S means at the same level of R =16.60 lb./ac.

Crop :- Gram ***(Rabi).*** **Ref :- Gj. 56(2).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'C'.**

Object :—To find out suitable spacing and economic seed rate for Gram.

1. BASAL CONDITIONS :

(i) (a) Gram—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) N.A. (iv) (a) 5 harrowings. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Chafa* (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) 39″. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(5) on page 243.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Low yields due to heavy rains. (vii) Nil.

5. RESULTS :

(i) 281.3 lb./ac. (ii) (a) 60.12 lb./ac. (b) 30.45 lb./ac. (iii) Interaction S×R alone is significant. (iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	301	252	268	274
R_2	275	267	301	281
R_3	276	309	284	290
Mean	284	276	284	281

S.E. of difference of two

1. S marginal means =20.04 lb./ac.
2. R marginal means =10.18 lb./ac.
3. R means at the same level of S =17.58 lb./ac.
4. S means at the same level of R =24.87 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 55(104)**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To ascertain the proper spacing, seed rate and manurial dose to Gram to get maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light and reddish colour. (b) N.A. (iii) 22.10.1955. (iv) (a) N.A. (b) Dibbling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Chafa.* (vii) Unirrigated. (viii) 3 weedings. (ix) 1.68″. (x) N.A.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=10$ lb./ac.
(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=50$ lb./ac.
(3) 2 levels of K_2O as Pot. Sul. : $K_0=0$ and $K_1=50$ lb./ac.
(4) 2 seed rates : $R_1=30$ and $R_2=40$ lb./ac.
(5) 2 spacings : $S_1=10''$ and $S_2=15''$.

3. DESIGN :

(i) 2^5 confd. (ii) (a) 8 plots/block ; 4 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 25′×22.5′. (b) 20′×17.5′. (v) 2.5′×2.5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5- RESULTS :

(i) 246.42 lb./ac. (ii) 73.55 lb./ac. (iii) Main effects of N and P are highly significant. Main effects of R, S and interaction K×R are significant. All other effects are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	N		P		K		R		S	
		−	+	−	+	−	+	−	+	−	+
N	86.19	—	—	75.69	96.69	65.81	106.57	59.82	112.56	68.14	104.24
P	73.97	63.47	84.47	—	—	18.98	128.96	39.75	108.19	105.47	42.47
K	30.65	10.27	51.03	−24.34	85.64	—	—	−10.34	71.64	−4.35	65.65
R	46.59	20.22	72.96	12.37	80.81	5.60	87.58	—	—	62.22	30.96
S	−39.20	−57.25	−21.15	−7.70	−70.70	−74.20	−4.20	−23.57	−54.83	—	—

S.E. of mean response =18.39 lb./ac.
S.E. of differential response =26.00 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 56(83).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To ascertain the proper spacing, seed rate and manurial dose to Gram to get maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Light and reddish colour. (b) N.A. (iii) 12 and 13.10.1956. (iv) (a) N.A. (b) Dibbling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Chafa.* (vii) Unirrigated. (viii) Nil. (ix) 108.7″. (x) 4 and 5.2.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no 55(104) above.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vi) Nil.

5. RESULTS :

(i) 676.0 lb./ac. (ii) 227.8 lb./ac. (iii) Only N effect is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	N		P		K		R		S	
		−	+	−	+	−	+	−	+	−	+
N	179.5	—	—	167	192	223	136	182	177	167	192
P	−45.5	−58	−33	—	—	−85	−6	−7	−85	−51	−40
K	4.5	48	−39	−35	44	—	—	14	−4	15	−6
R	−15.0	−12	−17	24	−54	−6	−24	—	—	−56	26
S	−83.5	−96	−71	−89	−78	−73	−94	−125	−43	—	—

S.E. of mean response =56.94 lb./ac.
S.E. of differential response =80.51 lb./ac.

Crop :- Gram *(Rabi).* **Ref :- Gj. 57(104).**

Site :- Agri. Res. Stn., Waghai. **Type :- 'CM'.**

Object :—To ascertain the proper spacing, seed rate and manurial dose to Gram to get maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Tur.* (c) Nil. (ii) (a) Light and reddish colour. (b) N.A. (iii) 29, 30.9.1957, 1.10.1957. (iv) (a) Three ploughings and 3 harrowings. (b) Dibbling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Chafa.* (vii) Unirrigated. (viii) Nil. (ix) 48.70″. (x) 13, 14.1.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(104) on page 245.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 354 lb./ac. (ii) 81.34 lb./ac. (iii) Only S effect is highly significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	N		P		K		R		S	
		−	+	−	+	−	+	−	+	−	+
N	−3.	—	—	29	−36	−6	0	12	−18	42	−48
P	8	40	−25	—	—	43	−27	18	−3	13	3
K	−31	−33	−28	5	−65	—	—	−10	−50	−54	−6
R	39	54	24	49	28	59	19	—	—	30	47
S	−61	−16	−106	−56	−66	−85	−37	−69	−52	—	—

S.E. of mean response =20.33 lb./ac.
S.E. of differential response =28.75 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 55(105).**

Site :- Agri. Res. Stn. Halvad. **Type :- 'I'.**

Object :—To find out the suitable number of irrigations for Gram.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—Gram. (b) Paddy. (c) —. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 9.11.1955. (iv) (a) One ploughing. (b) Drilling. (c) 40 lb./ac. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) Local. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 18.3.1956.

2. TREATMENTS :

3 levels of irrigation : I_0=0, I_1=1 and I_2=2 irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 667 lb./ac. (ii) 109.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	I_0	I_1	I_2
Av. yield	694	621	686

S.E./mean =48.93 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 56(125).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To find out the suitable number of irrigations for Gram.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—Gram—Groundnut. (b) Paddy. (c)—. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 3.10.1956. (iv) (a) 2 ploughings. (b) Drilling. (c) 20 lb./ac. (d) 18″ between rows. (e)—. (v) Nil. (vi) N.A. (vii) As per treatments. (viii) and (ix) N.A. (x) 5.3.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(105) above.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 362 lb /ac. (ii) 68.57 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	I_0	I_1	I_2
Av. yield	253	328	506

S.E./mean =28.00 lb./ac.

Crop :- Gram *(Rabi)*. **Ref :- Gj. 56(107).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'IC'.**

Object :—To find out suitable spacing and number of irrigations for Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 2.12.1956. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) As per treatments. (e) N.A. (v) 36 lb./ac. of P_2O_5 as Super. (vi) *Chafa.* (vii) As per treatments. (viii) and (ix) N.A. (x) 15.3.1957.

2. TREATMENTS :

Main-plot treatments:
2 spacings between rows : $S_1=9''$ and $S_2=18''$.
Sub-plot treatments :
3 levels of irrigation : $I_0=0$, $I_1=1$ and $I_2=2$ irrigations.

3. DESIGN :

(i) Split-plot. (ii) 2 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24′×18′. (b) 18′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pods yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 692 lb./ac. (ii) (a) 54.65 lb./ac. (b) 82.72 lb./ac. (iii) I effect alone is significant. (iv) Av. yield of grain in lb./ac.

	I_0	I_1	I_2	Mean
S_1	626	634	839	700
S_2	518	720	815	684
Mean	572	677	827	692

S.E. of difference of two
1. S marginal means =22.32 lb./ac.
2. I marginal means =41.37 lb./ac.
3. I means at the same level of S =58.49 lb./ac.
4. S means at the same level of I =52.71 lb./ac.

Crop :- Gram ***(Rabi).*** **Ref :- Gj. 57(83).**
Site :- Agri. Res. Stn., Umrala. **Type :- 'IC'.**

Object :—To find out the suitable spacing and number of irrigations for Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 13.11.1957 (iv) (a) One ploughing and 2 harrowings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) 36 lb./ac. of P_2O_5 as Super. (vi) *Chafa* (medium). (vii) As per treatments. (viii) N.A. (ix) Nil. (x) 27.2.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(107) on page 247, 248.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Number of branches, no. of pods, no. of grains, wt. of grains/plant, wt. of 100 grains ; grain and fodder yield. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 459 lb./ac. (ii) (a) 522.3 lb./ac. (b) 125.0 lb./ac. (iii) I effect alone is significant. (iv) Av. yield of grain in lb./ac.

	I_0	I_1	I_2	Mean
S_1	296	472	617	462
S_2	309	487	573	456
Mean	303	479	595	459

S.E. of difference of two

1. S marginal means =213.2 lb./ac.
2. I marginal means = 62.5 lb./ac.
3. I means at the same level of S = 44.2 lb./ac.
4. S means at the same level of I =225.1 lb./ac.

Crop :- Sugarcane. **Ref :- Gj. 54(78).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of N and P on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) 5.C.L./ac. of F.Y.M.+100 lb./ac. of A/S+300 lb./ac. of G.L. (ii) (a) Black soil. (b) N.A. (iii) 2.1.1954. (iv) (a) to (e) N.A. (v) Nil. (vi) CO. 419 (medium). (vii) Irrigated. (viii) 4 weedings and 3 top-dressings. (ix) 81.14". (x) 20.2.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of A/S : $N_1=120$, $N_2=170$ and $N_3=220$ lb./ac.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=100$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 31.5'×55.25'. (b) 24.5'×44.45'. (v) 2 rows. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Top-shoot borer. Dead hearts removed. (iii) Germination counts. Tillering count, no. of internodes and cane yield. (iv) (a) 1953—1955. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

4. RESULTS :

(i) 39.92 ton/ac. (ii) 3.85 ton/ac. (iii) Only the effect of N is significant (iv) Av. yield of grain in ton/ac.

	N_1	N_2	N_3	Mean
P_0	37.07	37.92	41.78	38.92
P_1	36.71	39.42	46.64	40.92
Mean	36.89	38.67	44.21	39.92

S.E. of N marginal mean =1.36 ton/ac.
S.E. of P marginal mean =1.11 ton/ac.
S.E. of body of table =1.92 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 55(63).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of N and P on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 12.1.1955. (iv) (a) and (b) N.A. (c) 12000 three budded setts/ac. (d) 3½′ between rows, 7 rows in a plot. (e) N.A. (v) 10 C.L./ac. of F.Y.M. on 25.12.1953. (vi) CO. 419. (vii) Irrigated. (viii) 5 weedings and 3 earthings. (ix) 77.97″. (x) 17.1.1956 to 23.1.1956.

2. TREATMENTS :

Same as in expt. no. 54(78) on page 249.

3. DESIGN

(i) 3×2 Fact. in R.B.D. (ii) 6. (iii) 4. (iv) (a) 55.25′×24.5′. (b) 47.0,×17.5′. (v) One row on either side, 4.12′ at either end. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of stem borer and top shoot borer. Control measures taken N.A. (iii) Height, no. of tillers, no. of internodes and germination count. (iv) (a) 1953—contd. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 31.50 ton/ac. (ii) 1.50 ton/ac. (iii) Only the effect of N is significant. (iv) Av. yield of cane in ton/ac.

	N_1	N_2	N_3	Mean
P_0	31.02	30.13	32.53	31.31
P_1	30.39	31.53	33.18	31.70
Mean	30.67	30.83	32.85	31.50

S.E. of N marginal mean =0.53 ton/ac.
S.E. of P marginal mean =0.44 ton/ac.
S.E. of body of table =0.75 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 54(79).**
Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of N as A/S, G.N.C. and F.Y.M. on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) 5 C.L./ac. of F.Y.M.+100 lb./ac. of A/S+300 lb./ac. of G.N.C. (ii) (a) Black soil. (b) N.A. (iii) 28.1.1954. (iv) (a) to (e) N.A. (v) Nil. (vi) CO. 419. (medium). (vii) Irrigated. (viii) N.A. (ix) 81.14″. (x) 10.2.1955.

2. TREATMENTS :

Main-plot treatments :
2 levels of F.Y.M. : F_1=10 and F_2=20 C.L./ac.
Sub-plot treatments :
3 ratios of A/S and G.N.C. to give 120 lb./ac. of N : N_1=0 : 1, N_2=1 : 1 and N_3=1 : 2.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 31.5′×35.25′. (b) 24.5′×44.45′. (v) Two rows on sides. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Top shoot borer. Dead hearts removed. (iii) Germination count, tillering count, no. of internodes and cane yield. (iv) (a) 1950—1954. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 37.48 ton/ac. (ii) (a) 3.15 ton/ac. (b) 2.56 ton/ac. (iii) N.A. (iv) Av. yield of cane in ton/ac.

	N_1	N_2	N_3	Mean
F_1	36.31	38.03	38.19	37.51
F_2	37.55	38.66	36.19	37.46
Mean	36.93	38.34	37.19	37.48

S.E. of difference of two

1. F marginal means =1.05 ton/ac.
2. N marginal means =1.04 ton/ac.
3. N means at the same level ef F =1.48 ton/ac.
4. F means at the same level of N =1.59 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 59(111).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To find out the effect of N, P and K on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) G.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Black. (b) N.A. (iii) 15.1.1959. (iv) (a) Three ploughings and one harrowing. (b) Wet planting. (c) 10,000 setts/ac. (d) 3.5′ between rows. (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) CO. 419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 94″. (x) 13.2.1960.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_1=80$, $N_2=100$ and $N_3=120$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=50$ and $P_2=100$ lb./ac.
(3) 3 levels of K_2O as Pot. Sul. : $K_1=50$, $K_2=100$ and $K_3=150$ lb./ac.

3. DESIGN:

(i) 3^3 Fact. confd. (ii) (a) 2 plots/block; 9 blocks/replication. (b) 220.5′×150′. (iii) 2. (iv) (a) 50′×24.5′. (b) 43.50′×17.5′. (v) One guard row on either side and 3¼′ border at both ends. (vi) Yes.

4. GENERAL :

(i) Healthy. No lodging. (ii) Incidence of Pyrilla. Dusted with 5% B.H.C. (iii) Cane yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 24.57 ton/ac. (ii) 3.97 ton/ac. (iii) Interaction P×K alone is significant. (iv) Av. yield of cane in ton/ac.

	N_1	N_2	N_3	Mean	K_1	K_2	K_3
P_0	22.38	25.14	23.98	23.83	24.09	25.57	21.84
P_1	25.66	23.71	26.39	25.26	26.79	23.19	25.79
P_2	22.87	26.97	23.99	24.61	21.12	26.53	26.19
Mean	23.64	25.27	24.79	24.57	24.00	25.09	24.61
K_1	23.83	23.64	24.52				
K_2	24.52	26.69	24.07				
K_3	22.56	25.49	25.77				

S.E. of any marginal mean =0.94 ton/ac.
S.E. of body of any table =1.62 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 59(113).**
Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of manures and intercropping on Sugarcane yield.

1. BASAL CONDITIONS:

(i) Sugarcane—Paddy. (b) Paddy. (c) G.M., 40 lb./ac. of N as A/S and 20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 14.1.1959. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) N.A. (e)—. (v) 10 C.L./ac. of F.Y.M. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 weedings. (ix) 94″. (x) 19 and 20.2.1960.

2. TREATMENTS :

1. 120 lb./ac. of N as A/S+50 lb./ac. of P_2O_5.
2. 120 lb./ac. of N as A/S+50 lb./ac. of P_2O_5+Sann on ridges.
3. 120 lb./ac. of N as A/S+50 lb./ac. of P_2O_5+Lucerne on ridges.
4. 120 lb./ac. of N as A/S+50 lb./ac. of P_2O_5+Sesbania on ridges.
5. 150 lb /ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 122½′×44.45′. (iii) 3. (iv) (a) 44.45′×24.5′. (b) 37.45′×17.5′. (v) 3.5′ at both ends; one guard row on each side. (vi) Yes.

4. GENERAL :

(i) Healthy. No lodging. (ii) No. (iii) Cane yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 25.08 ton/ac. (ii) 1.43 ton/ac. (iii) Treatments do not differ significantly. (iv) Av. yield of cane in ton/ac.

Treatment	1	2	3	4	5
Av. yield	24.32	25.23	25.36	24.83	25.68

S.E./mean =0.82 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 55(64).**
Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object : –To find out a suitable ratio of A/S and G.N.C. for top-dressing with different levels of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Paddy–Sugarcane. (b) Paddy. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 11.1.1955. (iv) (a) and (b) N.A. (c) 12,000 three—budded setts/ac. (d) 3.5′ between rows. (e) N.A. (v) N.A. (vi) CO—419. (vii) Irrigated. (viii) 6 weedings and 3 earthings. (ix) 77.97″. (x) 9.1.1956, 16.1.1956, 2.2.1956 and 10.2.1956.

2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments
(1) 2 levels of F.Y.M. : F_0=0 and F_1=10 C.L./ac.
(2) 3 ratios of A/S and G.N.C. to give 120 lb./ac. of N : R_1=1 : 0, R_2=1 : 1 and R_3=2 : 1.
Extra treatments :
T_1=15 C.L./ac. of F.Y.M.+120 lb./ac. of N as A/S.
T_2=10 C.L./ac. of F.Y.M.+120 lb./ac of N as A/S+100 lb./ac. of P_2O_5.
T_3=15 C.L./ac. of F.Y.M.+170 lb./ac. of N as A/S+10 lb./ac. of P_2O_5.
Source of P_2O_5 N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 31.5′×55.25′. (b) 24.5′×44.45′. (v) One row on either side and 5.4′ at either end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer.2% and top shoot borer 7% observed. Control measures—N.A. (iii) Germination count, no. of internodes, tiller count and cane yield. (iv) (a) 1950—contd. (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 32.32 ton/ac. (ii) 2.01 ton/ac. (iii) None of the effects is significant. (iv) Av. yield of cane in ton/ac.

T_1=33.18 ton./ac. ; T_2=30.83 ton/ac. ; T_3=30.72 ton/ac.

	R_1	R_2	R_3	Mean
F_0	32.25	32.39	31.82	32.15
F_1	33.67	33.38	32.69	33.25
Mean	32.96	32.88	32.25	32.70

S.E. of F marginal mean =0.58 ton/ac.
S.E. of R marginal mean =0.71 ton/ac.
S.E. of body of table =1.00 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 56(76).**
Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To find out a suitable ratio of A/S and G.N.C. for top dressing with different levels of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) G.M.+42 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 2 and 3.1.1956. (iv) (a) and (b) N.A. (c) 12,000 setts/ac. (d) 3½′ between rows. (e) N.A. (v) Nil. (vi) CO—419. (vii) Irrigated. (viii) 4 weedings, 3 interculturings and 2 earthings. (ix) 94.29″. (x) First week of February, 1957.

2. TREATMENTS :

Same as in expt. no. 55(64) on page 252.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 165.75′×94.5′. (iii) 4. (iv) (a) 55.25′×31.5′. (b) 44.45′×24.5′. (v) One row on either side, 5.4′ at either end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem-borer and top shoot borer attack. (iii) Height, no of tillers, no of internodes, girth, germination count and cane yield. (iv) (a) 1950—contd. (b) and (c) No. (v) (a) and (b) N A. (vi) and (vii) Nil.

5. RESULTS :

(i) 29.96 ton/ac. (ii) 1.67 ton/ac. (iii) Only selective treatments vs. the rest treatments effect is significant. (iv) Av. yield of sugarcane in ton/ac.

T_1=31.79 ton/ac. ; T_2=30.21 ton/ac. ; T_3=31.04 ton/ac.

	R_1	R_2	R_3	Mean
F_0	29.85	28.93	29.06	29.28
F_1	30.53	28.38	29.88	29.59
Mean	30.19	28.65	29.47	29.44

S.E. of F marginal mean =0.48 ton/ac.
S.E. of R marginal mean =0.59 ton/ac.
S.E. of body of table =0.83 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 56(119).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of A/S and G.N.C. top dressed, with different levels of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) G.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 16.12.1956. (iv) (a) 3 ploughings ; 1 harrowing and ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) 3.5′ between rows. (e) —. (v) Nil. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 80.5″. (x) 23.2.1958.

2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments

(1) 3 ratios of A/S and G.N.C. at 120 lb./ac. of N as top dressing : $R_1=1:0$. $R_2=1:1$ and $R_3=2:1$.

(2) 2 levels of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

Extra treatments : $T_1=15$ C.L./ac. of F.Y.M.+120 lb./ac. of N as A/S, $T_2=10$ C.L./ac. of F.Y.M.+120 lb./ac. of N as A/S+100 lb./ac. of P_2O_5 and $T_3=15$ C.L./ac. of F.Y.M.+170 lb./ac. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 165.75′×73.5′. (iii) 4. (iv) (a) 31.5′×55.25′. (b) 24.5′×44.45′. (v) One row on either side and 5.4′ at either end. (vi) Yes.

4. GENERAL :

(i) Good. No lodging. (ii) Nil. (iii) Cane yield. (iv) (a) 1950—1958 (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rain during July and August. (vii) Nil.

5. RESULTS :

(i) 31.53 ton/ac. (ii) 1.97 ton/ac. (iii) Effect of F is highly significant. Effects of T and T *vs.* others are significant. (iv) Av. yield of cane in ton/ac.

$T_1=31.04$, $T_2=31.31$ and $T_3=34.99$ ton/ac.

	R_1	R_2	R_3	Mean
F_0	27.46	30.49	28.05	28.67
F_1	31.59	32.97	33.11	32.56
Mean	29.52	31.73	30.58	30.61

S.E. of R marginal mean =0.70 ton/ac.
S.E. of F marginal mean =0.57 ton/ac.
S.E. of body of table =0.98 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 58(111).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'M'.**

Object :—To study the effect of A/S and G.N.C. as top dressing with different levels of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) G.M., 40 lb./ac. of N and 20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 10.1.1958. (iv) (a) 3 ploughings, 1 harrowing and ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) 3.5′ between rows. (e) —. (v) Nil. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 88.75″. (x) 17.1.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(119) on page 254.

4. GENERAL :

(i) Good ; no lodging. (ii) Nil. (iii) Cane yield. (iv) (a) 1950—1958 (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rain during July and August. (vii) Nil.

5. RESULTS :

(i) 28.42 ton/ac. (ii) 2.53 ton/ac. (iii) None of the effects is significant. (iv) Av. yield of cane in ton/ac.

T_1=29.39, T_2=28.97 and T_3=29.29 ton/ac.

	R_1	R_2	R_3	Mean
F_0	26.59	25.62	28.63	26.95
F_1	30.26	26.36	28.28	28.30
Mean	28.42	25.99	28.46	27.62

S.E. of N marginal mean =0.89 ton/ac.
S.E. of R marginal mean =0.73 ton/ac.
S.E. of body of table =1.26 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 59(67).**

Site :- Trial-Cum-Demonstration Farm, Bardoli. **Type :- 'CV'.**

Object :—To find out the best time of planting for different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12 C.L./ac. of compost+200 lb./ac. of A/S+100 lb./ac. of Super. (ii) (a) Black soil. (b) Refer soil analysis, Bardoli. (iii) As per treatments. (iv) (a) 2 ploughings. (b) and (c) N.A. (d) Between rows 3½'. (e) N.A. (v) 10 C.L./ac. of F.Y.M. in furrows+60 lb./ac. of N as A/S+60 lb./ac. of N as castor cake. (vi) As per treatments. (vii) Irrigated. (viii) 1 interculturing. (ix) 88.3". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 dates of planting : D_1=30th November, 1959, D_2=30th December, 1959, D_3=28th January, 1960 and D_4=24th February, 1960.

Sub-plot treatments :

3 varieties : V_1=CO—740, V_2=CO—705 and V_3=CO—419.

3. DESIGN :

(i) Split-plot. (ii) 4 main-plots/replication ; 3 sub-plots/main-plot. (iii) 5. (iv) (a) 35'×35'. (b) 28'×30'. (v) 3.5'×2.5'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Cane yield. (iv) (a) 1959—contd. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 33.95 ton/ac. (ii) (a) 4.30 ton/ac. (b) 3.95 ton/ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of cane in ton/ac.

	D_1	D_2	D_3	D_4	Mean
V_1	36.36	35.28	32.26	35.74	34.99
V_2	33.97	35.94	27.89	35.68	33.37
V_3	31.93	32.41	30.30	39.37	33.50
Mean	34.09	34.64	30.15	36.93	33.95

S.E. of difference of two

1. D marginal means =1.58 ton/ac.
2. V marginal means =1.26 ton/ac.
3. V means at the same level of D =2.50 ton/ac.
4. D means at the same level of V =2.57 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 59(112).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To study the effect of different depths of planting on the yield of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) 40 lb./ac. of N as A/S+20 lb./ac. of P_2O_5+G.M. (ii) (a) Black. (b) N.A. (iii) 24.2.1959. (iv) (a) 3 ploughings and 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) N.A. (e) —. (v) 10 C.L./ac. of F.Y.M. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 94″. (x) 18.2.1960.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 depths of ploughing : D_1=6″ deep with wooden plough and D_2=18″ deep.
(2) 2 levels of P_2O_5 : P_0=0 and P_1=75 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) 44.45′×98′. (iii) 3. (iv) (a) 24.5′×44.45′. (b) 17.5′×37.45′. (v) 3.5′ on both ends and one row on each side. (vi) Yes.

4. GENERAL :

(i) Healthy. No lodging. (ii) Nil. (iii) Cane yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rain during July and August. (vii) Nil.

5. RESULTS :

(i) 28.80 ton/ac. (ii) 1.66 ton/ac. (iii) None of the effects is significant. (iv) Av. yield of cane in ton/ac.

	D_1	D_2	Mean
P_0	28.92	28.69	28.80
P_1	27.68	29.92	28.80
Mean	28.30	29.30	28.80

S.E. of marginal mean of D or P =0.68 ton/ac.
S.E. of body of table =0.96 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 56(75).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To find out the optimum dose of N and P_2O_5 and spacing between two rows for Sugarcane.

1. BASAL CONDITIONS

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) Nil. (ii) (a) Black soil. (b) N.A. (iii) 28, 29.1.1956 and 25.2.1956. (iv) (a) and (b) N.A. (c) 12,000 3-budded setts/ac. (d) As per treatments. (e) N.A. (v) 10 C.L/ac. of F.Y.M. in furrows before planting. (vi) CO—419. (vii) Irrigated. (viii) 5 weedings and 2 earthings. (ix) 94.29″. (x) 4 cuttings from 11.1.1957. to 8.3.1957.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of spacing : S_1=3′, S_2=3.5′ and S_3=4′.
(2) 3 levels of N as A/S : N_1=180, N_2=240 and N_3=300 lb./ac.
(3) 2 levels of P_2O_5 as Super : P_0=0 and P_1=100 lb./ac.

3. DESIGN :

(i) Fact. in R.B.D (ii) (a) 18. (b) 168′×150′. (iii) 4. (iv) (a) 27′×50′ for S_1, 28′×50′ for S_2 and S_3. (b) 21′×38.85′ (S_1 and S_2), 20′×40.8′ (S_3). (v) 1 row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem-borer attack 5% and top borer attack 1.5%. (iii) Height, germination count, girth, no. of internodes, no. of tillers and yield of cane. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 35.67 ton/ac. (ii) 2.21 ton/ac. (iii) Only the effect of S is highly significant. (iv) Av. yield of cane in ton/ac.

	S_1	S_2	S_3	Mean	P_0	P_1
N_1	36.67	36.80	34.44	35.96	36.56	35.36
N_2	36.80	36.76	33.21	35.58	35.46	35.70
N_3	35.51	36.21	34.68	35.45	35.96	34.94
Mean	36.32	36.59	34.11	35.67	35.99	35.33
P_0	36.96	36.75	34.25			
P_1	35.66	36.40	33.94			

S.E. of S or N marginal mean	=0.46 ton/ac.
S.E. of P marginal mean	=0.37 ton/ac.
S.E. of body of S×P or N×P table	=0.64 ton/ac.
S.E. of body of S×N table	=0.78 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 57(122)/56(75).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To find out the optimum dose of N and P_2O_5 and spacing between rows for Sugarcane.

1, BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) G.M.+42 lb./ac. of N. (ii) (a) Black soil. (b) N.A. (iii) 18.1.1957. (iv) (a) 3 ploughings, one harrowing and ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 80.50". (x) 29.1.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(75) on page 256.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Cane yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 34.15 ton/ac. (ii) 3.91 ton/ac. (iii) Main effect of S is highly significant and effect of N is significant. (iv) Av. yield of cane in ton/ac.

	S_1	S_2	S_3	Mean	P_0	P_1
N_1	33.70	34.79	29.17	32.55	31.77	33.33
N_2	37.35	36.15	32.15	35.34	34.30	36.38
N_3	36.08	35.75	31.83	34.55	33.66	35.44
Mean	35.71	35.56	31.17	34.15	33.24	35.05
P_0	33.74	36.15	29.84			
P_1	37.68	34.98	32.50			

S.E. of N or S marginal mean	=0.80 ton/ac.
S.E. of P marginal mean	=0.65 ton/ac.
S.E. of body of N×P or S×P table	=1.38 ton/ac.
S.E. of body of N×S table	=1.13 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 58(110).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To find out the optimum dose of N and P with different spacings for Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) G.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 11.1.1958. (iv) (a) 3 ploughings, 1 harrowing and 1 ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 88.75″. (x) 8.2.1959.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 3 levels of N : N_1=100, N_2=125 and N_3=150 lb./ac.
(2) 3 spacings between rows : S_1=3′, S_2=3.5′ and S_3=4′.
(3) 2 levels of P_2O_5 : P_0=0 and P_1=100 lb./ac.

3. DESIGN :

Same as in expt. no. 56(75) on page 256.

4. GENERAL :

(i) Good ; no lodging. (ii) Nil. (iii) Cane yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 35.06 ton/ac. (ii) 3.56 ton/ac. (iii) Effect of S is significant and interaction S×P is significant. (iv) Av. yield of cane in ton/ac.

	S_1	S_2	S_3	Mean	P_0	P_1
N_1	34.61	35.52	32.89	34.34	33.57	35.13
N_2	35.47	36.81	33.00	35.09	34.31	35.88
N_3	37.03	37.17	33.06	35.75	35.40	36.11
Mean	35.70	36.50	32.98	35.06	34.43	35.71
P_0	34.53	37.51	31.24			
P_1	36.88	35.51	34.73			

S.E. of N or S marginal mean =0.73 ton/ac.
S.E. of P marginal mean =0.59 ton/ac.
S.E. of body of N×P or S×P table =1.03 ton/ac.
S.E. of body of N×S table =1.26 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 59(114).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To find out the optimum dose of N and P with different spacing between rows for Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) G.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 7.1.1959. (iv) (a) 3 ploughings, one harrowing and one ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 94″. (x) 3.2.1960.

2. TREATMENTS :

Same as in expt. no. 58(110) above.

3. DESIGN :

Same as in expt. no. 56(75) on page 256.

4. GENERAL :

(i) Healthy ; no lodging. (ii) No. (iii) Cane yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N A. (vi) and (vii) Nil.

5. RESULTS :

(i) 19.19 ton/ac. (ii) 4.50 ton/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cane in ton/ac.

	S_1	S_2	S_3	Mean	P_0	P_1
N_1	16.93	16.75	15.37	16.35	16.21	16.50
N_2	20.47	21.55	18.26	20.09	19.24	20.95
N_3	21.55	22.29	19.49	21.11	22.21	20.02
Mean	19.65	20.20	17.71	19.19	19.22	19.15
P_0	18.21	20.73	18.72			
P_1	21.09	19.67	16.70			

S.E. of N or S marginal mean =0.92 ton/ac.
S.E. of P marginal mean =0.75 ton/ac.
S.E. of body of N×P or S×P table =1.30 ton/ac.
S.E. of body of N×S table =1.59 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 57(121).**
Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To estimate the extent of deterioration in seed in successive years and possibility of improving it by manurial application.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) G.M. ; 40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 19.1.1957. (iv) (a) 3 ploughings, 1 harrowing and ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) 3.5′ between rows. (e) —. (v) 10 C.L./ac. of F.Y.M. for treatments 1 to 5 only. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 80.50″. (x) 9.3.1958.

2. TREATMENTS :

1. First year's seed.
2. Second year's seed.
3. Third year's seed.
4. Worst reported deteriorated seed (with usual dose of 120 lb./ac. of N as A/S and cake).
5. (4)+150 lb./ac. of P_2O_5.
6. (4)+200 lb./ac. of K_2O.
7. (4)+150 lb./ac. of P_2O_5+200 lb./ac. of K_2O.
8. (4)+150 lb./ac. of P_2O_5+200 lb./ac. of K_2O +Minor elements.
9. (5)+mixture of minor elements.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 220.5′×44.45′. (iii) 3. (iv) (a) 44.45′×24.5′. (b) 32.45′×17.5′. (v) One row on either side and 6′ at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Cane yield. (iv) (a) 1957—1959 (modified in 1959). (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 35.99 ton/ac. (ii) 3.42 tons/ac. (iii) Treatments do not differ significantly. (iv) Av. yield of cane in ton/ac.

Treatment	1	2	3	4	5	6	7	8	9
Av. yield	39.89	38.60	34.30	30.88	34.73	35.90	36.84	37.31	35.43

S.E./mean =1.97 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 58(112).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To estimate the extent of deterioration in seed in successive years and possibility of improving it by manurial application.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) G.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 18.1.1958. (iv) (a) 3 ploughings, 1 harrowing and ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) 3.5′ between rows. (e) N.A. (v) 10 C.L./ac. of F.Y.M. for treatments 1 to 5 only. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 88.75″. (x) 18.1.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(121) on page 259.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Cane yield. (iv) (a) 1957—1959 (modified in 1959). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains in July and August. (vii) Nil.

5. RESULTS :

(i) 38.39 ton/ac. (ii) 2.11 ton/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in ton/ac.

Treatment	1	2	3	4	5	6	7	8	9
Av. yield	43.79	41.30	40.36	34.87	35.86	37.45	37.24	37.78	36.84

S.E./mean =1.22 ton/ac.

Crop :- Sugarcane. **Ref :- Gj. 59(128).**

Site :- Agri. Res. Stn., Vyara. **Type :- 'CM'.**

Object :—To estimate the extent of deterioration in seed in successive years and possibility of improving it by the application of manures.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) G.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Black soil. (b) N.A. (iii) 12.1.1959. (iv) (a) 3 ploughings, 1 harrowing, and ridging. (b) Wet planting. (c) 10,000 setts/ac. (d) 3.5′ between rows. (e) N.A. (v) 10 C.L./ac. of F.Y.M. to be given in furrows before planting. (vi) CO—419 (medium). (vii) Irrigated. (viii) 8 hand weedings. (ix) 94.20″. (x) 25.2.1960.

2. TREATMENTS :

1. First year's seed.
2. Second year's seed.
3. Third year's seed.
4. Worst reported deteriorated seed.
5. (4)+150 lb./ac. of P_2O_5.
6. (4)+200 lb./ac. of K_2O.
7. (4)+150 lb /ac. of P_2O_5+200 lb./ac. of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 171.5′×44.45′. (iii) 3. (iv) (a) 44.45′×24.5′. (b) 37.5′×17.5′. (v) One row on either side and 3.5′ at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Cane yield. (iv) (a) 1957—1959 (modified in 1959). (b) No. (c) Nil. (vi) (a) and (b) N.A. (vi) Heavy rain during monsoon. (vii) Nil.

5. RESULTS :

(i) 25.10 ton/ac. (ii) 2.37 ton/ac. (iii) Treatments do not differ significantly. (iv) Av. yield of cane in ton/ac.

Treatment	1	2	3	4	5	6	7
Av. yield	27.42	25.60	22.75	25.39	26.41	22.75	25.39

S.E./mean =1.37 ton/ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 56(8).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of various fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar* or *Bajra*—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 9.7.1956. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Between rows 3′ and between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5 as triple Super drilled. (vi) Pratap (early). (vii) Unirrigated. (viii) 6 interculturings, 1 thinning and 2 weedings. (ix) 26.96″. (x) Pickings on 15.11.1956 9.12.1956. and 8.1.1957.

2. TREATMENTS :

5 sources of 40 lb./ac. of N and a control : S_0=0, S_1=A/S, S_2=Urea, S_3=C/N, S_4=Calcium cynamide and S_5=A/S/N.

All manures were spread and applied at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 36′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Unequal growth and many gaps in each plot. (ii) Nil. (iii) Seed cotton and stalk yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Surat. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 353 lb./ac. (ii) 68.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	278	414	338	385	330	370

S.E./mean =34.0 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(6).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of various fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 2.7.1957. (iv) (a) 4 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. +20 lb./ac. of P_2O_5 as triple Super. (vi) Pratap. (vii) Unirrigated. (viii) 4 interculturings. (ix) 27.42″. (x) 1.11.1957 and 2.1.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(8) above.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 258 lb./ac. (ii) 41.47 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	186	271	284	264	235	309

S.E./mean =20.73 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(99).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of various fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 2.7.1958. (iv) (a) 1 harrowing. (b) Drilling. (c) 15 lb./ac. (d) 36″ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) C.J.—73. (vii) Unirrigated. (viii) 2 interculturings. (ix) 28.76″. (x) 6.12.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(8) on page 261.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Seed cotton. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 250 lb./ac. (ii) 25.86 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	205	289	258	236	224	287

S.E./mean =12.93 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(96).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of different nitrogenous fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 11.7.1959. (iv) (a) One ploughing and two harrowings. (b) Dibbling. (c) 15 lb./ac. (d) 36″×6″. (e) N.A. (v) 20 lb./ac. of P_2O_5 as Super. (vi) C. J.—73. (vii) Unirrigated. (viii) 3 to 4 interculturings and 2 weedings (ix) 45.56″. (x) 18.11.1959 and 23.12.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(8) on page 261.

4. GENERAL :

(i) Heavy rain badly affected the crop. (ii) Nil. (iii) Seed cotton. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains in October (6″ in 2 days). (vii) Nil.

5. RESULTS

(i) 68 lb./ac. (ii) 20.47 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	35	93	105	34	64	77

S.E./mean =10.23 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 56(9).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of various phosphatic fertilizers on the performance and yield of Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar* or *Bajra*—Groundnut. (c) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 9.7.1956. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Between rows 3′ and between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. was given in June+40 lb./ac. of N in the form of A/S was spread in all the plots. (vi) Pratap (early). (vii) Unirrigated. (viii) 6 interculturings, 1 thinning and 2 weedings. (ix) 26.96″. (x) Pickings on 15.11.1256 ; 9, 10.12.1956 and 6, 9.1.1957.

2. TREATMENTS

5 sources of 20 lb./ac. of P_2O_5 and a control : S_0=Control, S_1=Super, S_2=B.M, S_3=Dicalcium phos., S_4=Hyper phos and S_5=Kotka phos.

Phosphatic fertilizers were drilled in the plots. Cotton seeds were sown and covered by *rapta*.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 36′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Unequal growth with many gaps in the plots. (ii) Nil. (iii) Seed cotton and stalk yield. (iv) (a) 1956—1959. (b) No. (c) N.A. (v) (a) Surat. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 390 lb./ac. (ii) 47.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	331	405	382	451	377	395

S.E./mean =23.5 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(7).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of various phosphatic fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 2.7.1957. (iv) (a) 4 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as A/S. (vi) Pratap. (vii) Unirrigated. (viii) 5 interculturings. (ix) 27.42″. (x) 1.11.1957 and 2.1.1958.

2. TREATMENTS :

5 sources of 20 lb./ac. of P_2O_5 and a control : S_0=0, S_1=Triple Super, S_2=B.M., S_3=Dicalcium phos., S_4=Hyper phos. and S_5=Kotka phos.

S_2 is not applied and treated as control.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 36′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) There were no late rains and as such crop suffered.

5. RESULTS :

(i) 286 lb./ac. (ii) 44.15 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0+S_2	S_1	S_3	S_4	S_5
Av. yield	249	356	348	262	252

S.E. of any treatment mean other than control =22.07 lb./ac.
S.E. of control mean =15.61 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 58(100).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of various phosphatic fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 2.7.1958. (iv) (a) One harrowing. (b) Drilling. (c) 15 lb./ac. (d) 36″ between rows. (e)—. (v) 5 C.L./ac. of F.Y.M. (vi) C.J.—73. (vii) Unirrigated. (viii) 2 interculturings. (ix) 28.76″. (x) 6.12.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(7) on page 263.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Seed cotton. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 263 lb./ac. (ii) 53.69 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0+S_2	S_1	S_3	S_4	S_5
Av. yield	239	253	283	239	325

S.E. of any treatment mean other than control =26.85 lb./ac.
S.E. of control mean =18.98 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 59(97).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of different phosphatic fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 11.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 15 lb./ac. (d) 36″×6″. (e) —. (v) 20 lb./ac. of N as A/S. (vi) C.J.—73. (vii) Unirrigated. (viii) 3-4 interculturings and 2 weedings. (ix) 45.56″. (x) 18.11.1959 and 23.12.1959.

2. TREATMENTS :

5 sources of 20 lb./ac. of P_2O_5 and a control : S_0=Control, S_1=Triple Super, S_2=B.M., S_3=Dicalcium phos., S_4=Hyper phos. and S_5=Kotka phos.

Time and method of application N.A. As B.M. and Hyper phos. were not available these treatments were dropped from the experiment.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 36′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL

(i) Heavy rains affected the crop badly. (ii) Nil. (iii) Seed cotton. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rains in October (6″ in 2 days). (vii) Nil.

5. RESULTS :

(i) 129 lb./ac. (ii) 30.30 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_3	S_5
Av. yield	94	188	101	132

S.E./mean =15.15 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 54(16).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To investigate the stabilising effect of N and its availability to Cotton in the soil.

1. BASAL CONDITIONS:

(i) (a) Cotton—*Jowar* or *Bajra*—Groundnut. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 6.7.1954. (iv) (a) 1 ploughing and 3 harrowings. (b) Drilling. (c) 15 lb./ac. (d) Between rows—18″ and between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) Pratap (early). (vii) Unirrigated. (viii) 1 thinning, 1 weeding and 2 interculturings. (ix) 26.72″. (x) 3.12.1954, 22.12.1954 and 21.1.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of A/S : S_0=0. S_1=224 and S_2=448 lb./ac.
(2) 3 levels of cellulose : C_0=0, C_1=2 and C_2=5 tons/ac.

A/S was spread on 18.6.1954 and it was covered with cellulose material.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 27′×52′. (b) 15′×40′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) The growth was normal. (ii) Nil. (iii) Seed yield. (iv) (a) 1952—1954. (b) and (c) No. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 287 lb./ac. (ii) 51.00 lb./ac. (iii) C and S effects are significant while interaction is not significant. (iv) Av. yield of *kapas* in lb./ac.

	C_0	C_1	C_2	Mean
S_0	226	270	301	266
S_1	239	295	304	279
S_2	246	361	340	316
Mean	237	309	315	287

S.E. of any marginal mean =12.02 lb./ac.
S.E. of body of table =20.82 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 56(35).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the effect of sann green manuring with and without P_2O_5 and in combination with manure mixture on Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) 200 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 12.6.1956. (iv) (a) 2 ploughings and 1 harrowing. (b) Drilling. (c) 10 lb./ac. (d) 3′×3′. (e) N.A. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 6 interculturings. (ix) 33.75″. (x) 25.2.1957 and 10.3.1957.

2. TREATMENTS

Main-plot treatments:

Manuring of previous Sannhemp crop : M_0=Sann hemp without P_2O_5 and M_1=Sann with 16 lb./ac. of P_2O_5.

Sub-plot treatments :

2 levels of manure mixture : S_0=No manure and S_1=200 lb./ac. of manure mixture.

Manure mixture applied to cotton crop.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Light attack of jassids and aphids. Spraying with Geigy 1250. (iii) *Kapas* yield. (iv) (a) 1956—N.A. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 469 lb./ac. (ii) (a) 36.43 lb./ac. (b) 43.66 lb./ac. (iii) Only M and S effects are highly significant. (iv) Av. yield of *kapas* in lb./ac.

	M_0	M_1	Mean
S_0	333	489	411
S_1	443	609	526
Mean	388	549	469

S.E. of difference of two

1. M marginal means =14.87 lb./ac.
2. S marginal means =17.82 lb./ac.
3. S means at the same level of M =25.21 lb./ac.
4. M means at the same level of S =23.21 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(40).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the effect of Sann G.M. on Cotton with and without N and P_2O_5.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sann for G.M. and fallow. (c) 16 lb./ac. of P_2O_5 to one plot of Sann. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 3.7.1957. (iv) (a) Ploughings and harrowings. (b) to (e) N.A. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 4 interculturings and 2 weedings. (ix) 15.09″. (x) 2.1.1958 and 27.1.1958.

2. TREATMENTS :

1. Cotton after fallow.
2. Cotton after fallow+16 lb./ac. of P_2O_5.
3. Cotton after fallow+Sann G.M.
4. Cotton after Sann G.M.+16 lb./ac. of N.
5. Cotton after Sann+16 lb./ac. of P_2O_5.
6. Cotton after Sann with 16 lb./ac. of N+Green manuring+16 lb./ac. of P_2O_5.

3. DESIGN

(i) R.B.D (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 51′×15′. (b) 45′×9′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory growth. (ii) Slight attack of red leaf and black arm disease, very light attack of aphids and jassids. One spraying with Endrine. (iii) Seed cotton yield. (iv) (a) 1956—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 358 lb./ac. (ii) 60.83 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	298	321	358	410	349	412

S.E./mean =27.20 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(29).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the economics of hot weather Sann G.M. with and without P_2O_5 on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) N.A. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) 5 lb./ac. (d) 3′×9″. (e)—. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 3 interculturings and 2 weedings. (ix) 13″. (x) 30.1.1959.

2. TREATMENTS :

1. Control (no sann, no manure).
2. Cotton manured with 16 lb./ac. of N.
3. Sann G.M. to cotton
4. Sann as G.M.+16 lb./ac. of N to cotton.
5. Sann as G.M.+16 lb./ac. of P_2O_5 to cotton.
6. Sann as G.M.+16 lb./ac. of P_2O_5+16 lb./ac. of N to cotton.

Source of N and P, amount of G.M. and method of application—N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 12′×40′. (b) 6′×34′ (v) 3′×3′ (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 604 lb./ac. (ii) 92.67 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	501	495	541	748	643	733

S.E./mean =46.33 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(16).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the economics of hot weather G.M. with and without P_2O_5 on yield of Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) *Tur* (before sowing of Sann). (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 4.7.1959. (iv) (a) 2 ploughings and 1 harrowing. (b) Drilling. (c) 8—10 lb./ac. (d) 3′×18″. (e)—. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 5 interculturings and 3 weedings. (ix) 34″. (x) 7.3.1960.

2. TREATMENTS :

Same as in expt. no. 58(29) on page 267.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 40′×12′. (b) 34′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of grass hopper, shoot borers, aphids and jassids. (iii) *Kapas* yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 372 lb./ac. (ii) 67.58 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	336	402	243	348	429	476

S.E./mean =30.22 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 59(17).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the comparative effect of Sann and *Guwar* green manuring on yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 4.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 10 lb./ac.—cotton 40 lb./ac —sann and *guwar*. (d) As per treatments. (e) N.A. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 5 interculturings and 3 weedings. (ix) 34″. (x) 11.2.1960.

2. TREATMENTS :

(1) Cotton alone with 3′ spacing.
(2) Cotton alone with 4.5′ spacing.
(3) Cotton with 3′ spacing and 2 rows of sann.
(4) Cotton with 4.5′ spacing and 3 rows of sann.
(5) Cotton with 3′ spacing and 2 rows of *guwar*.
(6) Cotton with 4.5′ spacing and 3 rows of *guwar*.
Amount of G.M.—N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 40′×18′. (b) 34′×9′. (v) 3′×4.5′. (vi) Ye

4. GENERAL :

(i) Good. (ii) Slight attack of grass hoppers, flies, aphids and jassids. Spraying of Endrex once. (iii) *Kapas* yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 640 lb./ac. (ii) 72.03 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	660	605	673	618	625	656

S.E./mean =36.01 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 55(101).**

Site :- Agri. Res. Stn., Jamnagar. **Type :- 'M'.**

Object :—To find out the optimum dose of N, P and K for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 1.8.1955. (iv) (a) N.A. (b) Dibbling. (c) 5 lb./ac. (d) 3′×1.5′. (e) N.A. (v) Sann G.M. (vi) Co$_2$—170. (vii) Irrigated. (viii) 6 interculturings and 1 weeding. (ix) 12.29″. (x) 8.2.1956 and 9.4.1956.

2. TREATMENTS :

1. 20 lb./ac. of N.
2. 40 lb./ac. of N.
3. 20 lb./ac. of N+20 lb./ac. of P_2O_5.
4. 40 lb./ac. of N+20 lb./ac. of P_2O_5.
5. 40 lb./ac. of N+20 lb./ac. of P_2O_5+40 lb./ac. of K_2O.
6. Control (no manure).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of jassids and boll worms. (iii) *Kapas* yield. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot-wise yield N.A.

5. RESULTS :

(i) 404 lb./ac. (ii) N.A. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	466	415	406	416	373	346

S.E/mean =N.A.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 56(115).**

Site :- Agri. Res. Stn., Jamnagar. **Type :- 'M'.**

Object :—To find out the optimum dose of N, P and K for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) Nil. (vi) Co$_2$—170. (vii) N.A. (viii) N.A. (ix) 29.03″. (x) N.A.

2. TREATMENTS :

1. Control.
2. 20 lb./ac. of N.
3. 40 lb./ac. of N.
4. 20 lb./ac. of N+18 lb./ac. of P_2O_5.
5. 40 lb./ac. of N+36 lb./ac. of P_2O_5.
6. 40 lb./ac. of N+18 lb./ac. of P_2O_5+44 lb./ac. of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot-wise yield N.A.

5. RESULTS :

(i) 982 lb./ac. (ii) N.A. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6
Av. yield	823	971	1094	1008	1108	890

S.E./mean =N.A.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(53).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the role of organic manures and fertilizers in crop production and maintenance of soil fertility.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.6.1958. (iv) (a) N.A. (b) Dibbling. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) 5 to 6 seeds/dibble. (v) F.Y.M. applied on 14.6.1958. (vi) Cotton—2087. (vii) Unirrigated. (viii) 6 interculturings, 3 weedings and 2 thinnings. (ix) 44.81″. (x) 3.4.1959.

2. TREATMENTS :

1. Control.
2. 5 C.L./ac. of F.Y.M. (usual dose).
3. 2½ C.L./ac. of F.Y.M.
4. N. P, K fertilizers equivalent to 5 C.L./ac. of F.Y.M.
5. N, P, K fertilizers equivalent to 2½ C.L./ac. of F.Y.M.
6. 5 C.L./ac. of F.Y.M.+N, P, K fertilizers equivalent to 5 C.L./ac. of F.Y.M.
7. 2½ C.L./ac. of F.Y.M.+N, P, K fertilizers equivalent to 2½ C.L./ac. of F.Y.M.
8. 40 lb./ac. of N+20 lb./ac. of P_2O_5+N, P, K fertilizers equivalent to 5 C.L./ac. of F.Y.M.
9. Half the dose in treatment 8.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 36′×25′. (b) 24′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Boll-worm attack. (iii) Yield of seed cotton. (iv) (a) 1958—contd. (b) and (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 529 lb./ac. (ii) 75.29 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6	7	8	9
Av. yield	419	460	416	601	462	603	562	664	571

S.E./mean =37.64 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(31).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the role of organic manures and fertilizers in crop production and maintenance of soil fertility.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 26.6.1959. (iv) (a) Nil. (b) Dibbling. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) 5-6 seeds/dibble. (v) Nil. (vi) 2087 (*Vijalpa*). (vii) Unirrigated. (viii) 8 interculturings and 5 weedings. (ix) 70.77″. (x) 9.4.1960.

2. TREATMENTS :

Same as in expt. no. 58(53) above.
F.Y.M. applied on 7.6.1959 and N,P,K fertilizers on 30.8.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 108′×75′. (iii) 4. (iv) (a) 36′×25′. (b) 24′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Germination was satisfactory but due to continuous rains and heavy floods, the stand of crop was uneven. Gapfilling was not successful due to continuous rains thereafter. (ii) Attack of boll-worms. (iii) Seed cotton yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 578 lb./ac. (ii) 148.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4	5	6	7	8	9
Av. yield	402	391	399	830	633	681	498	744	623

S.E./mean =74.10 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(55).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the effect of burning *Jowar* stubbles on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.6.1958. (iv) (a) Nil. (b) Dibbling. (c) 4-5 lb./ac. (d) 5′×2′. (e) 5-6 seeds/dibble. (v) Nil. (vi) 2087 (*Vijalpa*). (vii) Unirrigated. (viii) 5 interculturings and 3 weedings. (ix) 44.81″. (x) 3.4.1959.

2. TREATMENTS :

1. Control.
2. Burning of *Jowar* stubbles in cotton fields at the rate of 380 lb./ac. of stubbles/plot.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) 36′×50′. (iii) 12. (iv) (a) 36′×25′. (b) 24′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Boll-worm attack about 15%. (iii) Seed cotton yield. (iv) (a) 1958—contd. (b) and (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 369.5 lb./ac. (ii) 51.09 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2
Av. yield	353	386

S.E./mean =14.75 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(33).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the effect of burning *Jowar* stubbles on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 20 lb./ac. of N as A/S. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 26.6.1959. (iv) (a) Nil. (b) Dibbling. (c) 4—5 lb./ac. (d) 5′×2′. (e) 5—6 seeds/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) 2087 (*Vijalpa*). (vii) Unirrigated. (viii) 5 interculturings and 5 weedings. (ix) 70.77″. (x) 9.4.1960.

2. TREATMENTS :

Same as in expt. no. 58(55) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) 36′×50′. (iii) 12. (iv) (a) 36′×25′. (b) 24′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of boll-worms. (iii) Seed cotton yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 344.5 lb./ac. (ii) 54.72 lb /ac. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2
Av. yield	333	356

S E./mean =15.80 lb./ac.

Crop :- Cotton. **Ref :- Gj. 54(69).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To investigate the stability effect of N and its availability to Cotton in the soil.

1. BASAL CONDITIONS :

(i) (a) Cotton after *Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 24.6.1954. (iv) (a) 3 harrowings. (b) Dibbling. (c) 3 lb./ac. (d) 6'×2'. (e) 4 to 5 seeds/dibble. (v) Nil. (vi) 2087 (*Vijalpa*, medium). (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 5 interculturings. (ix) 81.54". (x) 2.3.1955., 3.4.1955. and 17.4.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 doses of A/S : S_0=0, S_1=224, S_2=448 lb./ac.

(2) 3 doses of cellulosic matter : C_0=0, C_1=2 and C_2=5 ton/ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6'×6'. (vi) Yes.

4. GENERAL :

(i) Growth was below normal particularly in no manure plots. (ii) Nil. (iii) Periodical height, number and weight of green cotton stalks were taken. (iv) (a) 1952—contd. (b) In alternate years two sets of plots were assigned tothe expt. (c) No. (v) (a) Amreli. (b) N.A. (vi) Season was very abnormal. (vii) Nil.

5. RESULTS :

(i) 601 lb./ac. (ii) 62.91 lb./ac. (iii) Treatment differences are significant. (iv) yield of *kapas* in lb./ac.

	C_0	C_1	C_2	Mean
S_0	526	554	513	531
S_1	615	598	618	610
S_2	742	663	585	663
Mean	628	605	572	601

S.E. of any marginal mean =14.83 lb./ac.

S.E. of body of table =25.68 lb./ac.

Crop :- Cotton. **Ref :- Gj. 55(51).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To investigate the stabilising effect of N and its availability to Cotton in the soil.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar* B.P. 53. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.6.1955. (iv) (a) N.A. (b) Dibbling. (c) 2½ to 3 lb./ac. (d) 6'×2'. (e) N.A. (v) Nil. (vi) *Vijay*. (vii) Unirrigated. (viii) 2 thinnings, 3 weedings and 6 interculturings. (ix) 27". (x) 5.3.1956 to 24.3.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(69) on page 272.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1952—N.A. (b) Yes (in alternate years). (c) No. (v) (a) Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 800 lb./ac. (ii) 106.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

	C_0	C_1	C_2	Mean
S_0	521	556	588	555
S_1	801	820	747	789
S_2	1228	973	969	1057
Mean	850	783	768	800

S.E. of any marginal mean =25.06 lb./ac.
S.E. of body of table =43.39 lb./ac.

Crop :- Cotton. **Ref :- Gj. 56(62).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To see the effect of different nitrogenous fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar—Tur*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 20.6.1956. (iv) (a) N.A. (b) Hand dibbling. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5 as Super. (vi) Cotton—2087. (vii) Unirrigated. (viii) 2 thinnings, 1 weeding, 5 interculturings and 1 gap filling. (ix) 41.74″. (x) 2.3.1957 and 1.4.1957.

2. TREATMENTS :

1. 40 lb./ac. of N as A/S.
2. 40 lb./ac. of N as Urea.
3. 40 lb./ac. of N as calcium cynamide.
4. 20 lb./ac. of P_2O_5 as hyper phos.
5. 40 lb./ac. of N as A/S/N.
6. Control.

All nitrogeneous fertilisers except calcium cynamide applied at the time of sowing, calcium cynamide applied in dry condition about 15 days before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 30′×20′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Heavy attack of boll-worm. (iii) Seed cotton yield. (iv) (a) 1956—N.A. (b) and (c) No. (v) (a) Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 426 lb./ac. (ii) 60.81 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac

Treatment	1	2	3	4	5	6
Av. yield	444	337	549	459	436	330

S.E./mean =30.40 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(69).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To see the effect of different nitrogenous fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar* after cotton. (b) *Jowar*. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 6.7.1957, re-dibbling on 17.7.1957 and 20.7.1957. (iv) (a) N.A. (b) Dibbling. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) 5 to 6 seeds/dibble. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5 as Super. (vi) Cotton—2087. (vii) Irrigated. (viii) 3 interculturings, 2 weedings and 1 thinning. (ix) 33.41″. (x) 25.3.1958. and 3.4.1958.

2. TREATMENTS :

5 sources of 40 lb./ac. of N and a control : S_0=0, S_1=A/S, S_2=Urea, S_3=Calcium nitrate, S_4=Calcium cynamide and S_5=A/S/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 30′×20′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Growth reached a height of 50″ to 70″. (ii) Pink boll-worm and drying of bolls before maturing were about 15%. No disease. (iii) Wt. of seed cotton. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 445 lb./ac. (ii) 68.40 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	393	471	419	489	411	486

S.E./mean =34.20 lb./ac..

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(51).**
Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the effect of different nitrogenous fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton after *Jowar* and *Tur*. (b) *Jowar* and *Tur*. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.6.1958. (iv) (a) N.A. (b) Dibbling. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) 5 to 6 seeds/dibble. (v) 5 C.L./ac. of F.Y.M.+20 lb./ac. of P_2O_5 as Super. (vi) Cotton—2087. (vii) Unirrigated. (viii) 4 interculturings, 4 weedings and 1 thinning. (ix) 44.81″. (x) 4.4.1959.

2. TREATMENTS :

Same as in expt. no. 57(69) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 30′×20′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Growth of cotton reached a height of 98 to 119 cms. (ii) Boll-worm attack was observed about 15 to 20%. (iii) Yield of seed cotton. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 536 lb./ac. (ii) 68.94 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	440	522	531	640	540	544

S.E./mean =34.47 lb./ac.

Crop :- Cotton. **Ref :- Gj. 56(63).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the effect of P_2O_5 on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*+*Tur*. (b) *Jowar*+*Tur*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 20.6.1956. (iv) (a) and (b) N.A. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as A/S. (vi) Cotton—2087. (vii) Unirrigated. (viii) 2 thinnings, 1 weeding and 5 interculturings. (ix) 41.74″. (x) 1st picking—2.3.1957 ; 2nd picking—1.4.1957.

2. TREATMENTS :

5 sources of 20 lb./ac. of P_2O_5 and a control : S_0=0, S_1=Super, S_2=B.M., S_3=Dicalcium phos., S_4=Hyper phos. and S_5=Kotka phosphate.

Phosphates drilled before sowing in the field.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42′×30′. (b) 30′×20′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Heavy attack of boll-worm. (iii) Seed cotton yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS ;

(i) 618 lb./ac. (ii) 121.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	676	596	710	624	518	583

S.E./mean =60.90 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(70).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object : To study the effect of P_2O_5 on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*+*Tur*. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 6.7.1957, re-dibbling on 17.7.1957. (iv) (a) N.A. (b) Dibbling. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) 5 to 6 seedlings. (v) 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as A/S. (vi) Cotton—2087 (*Vijalpa*). (vii) Irrigated. (viii) 3 interculturings, 2 weedings and 1 thinning. (ix) 23.41″. (x) 25.3.1958 to 3.4.1958.

2. TREATMENTS to 3. DESIGN :

Same as in expt. no. 56(63) above.

4. GENERAL :

(i) Growth generally even. (ii) Pink boll-worm and drying of bolls before maturing in the 1st setting of bolls in November. (iii) Weight of seed cotton. (iv) (a) 1956—contd. (b) No (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 507 lb./ac. (ii) 59.60 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	484	490	504	518	495	549

S.E./mean =29.80 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(52).**

Site :- Agri. Res. Stn., Surat. **Type :- 'M'.**

Object :—To study the effect of P_2O_5 on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar* after cotton. (b) *Jowar+Tur*. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.6.1958. (iv) (a) N.A. (b) Dibbling. (c) 4 to 5 lb./ac. (d) 5′×2′. (e) 5 to 6 seeds per dibble. (v) 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as A/S. (vi) 2087 (*Vijalpa*). (vii) Unirrigated. (viii) 3 interculturings, 4 weedings and 1 thinning. (ix) 44.81″. (x) 4.4.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(63) on page 275.

4. GENERAL :

(i) Growth in all the plots was generally even. The season was rather late this year. (ii) Boll-worm attack was observed about 16% in all the treatments. (iii) Yield of seed cotton. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 486 lb./ac. (ii) 47.54 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	504	454	522	467	472	499

S.E./mean =23.77 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 56(MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type V—To study the effect of different sources of N applied at different times.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) July 1956. (iv) (a) 2 ploughings with country plough and 2 harrowings. (b) Drilling. (c) 20 lb./ac. (d) 18″×12″. (e) N.A. (v) 20 lb./ac. of P_2O_5 and 5,000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) One interculturing and one weeding. (ix) N.A. (x) December 1956.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 2 sources of 50 lb./ac. of N : S_1=A/S and S_2=Urea.

(2) 6 times of application of N : T_1=At sowing, T_2=At thinning, T_3=At flowering, $T_4=\frac{1}{2}$ at thinning+$\frac{1}{2}$ at flowering, $T_5=\frac{1}{3}$ at sowing+$\frac{1}{3}$ at thinning+$\frac{1}{3}$ at flowering and $T_6=\frac{1}{2}$ at flowering+$\frac{1}{2}$ one month after flowering.

3. DESIGN

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 24′×12′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Cotton yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 534 lb./ac. (ii) 108.8 lb./ac. (iii) Only the effect of control *vs.* others is significant. (iv) Av. yield of grain in lb /ac.

Control =444 lb./ac.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
S_1	568	699	518	502	453	576	553
S_2	592	403	502	576	667	444	531
Mean	580	551	510	539	560	510	542

S.E. of the marginal mean of T =44.4 lb./ac.
S.E of the marginal mean of S =25.6 lb./ac.
S.E. of body of table or control mean =62.8 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 57(MAE).**
Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type V—To study the effect of different sources of N applied at different times.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) 3.7.1957. (iv) (a) 2 ploughings with country plough and two harrowings. (b) Drilling. (c) 20 lb./ac. (d) 18″×12″. (e) N.A. (v) 20 lb./ac. of P_2O_5 and 5,000 lb./ac. of F.Y.M. (vi) *Pratap* (171 days). (vii) Irrigated. (viii) One interculturing and one weeding. (ix) 23″. (x) 21.12.1957.

2. TREATMENTS to 3. DESIGN :

Same as in expt. no. 56(MAE) on cotton crop on page 276.

4. GENERAL :

(i) Satisfactory. (ii) Crop attacked by aphids and jassids. (iii) Cotton yield. (iv) (a) 1956—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1000 lb./ac. (ii) 123.8 lb./ac. (iii) Only the effect of control *vs* others is significant. (iv) Av. yield of cotton in lb./ac.

Control=852 lb./ac.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
S_1	867	865	1090	954	1179	993	991
S_2	1039	1114	934	985	1084	1040	1033
Mean	953	989	1012	969	1131	1016	1012

S.E. of marginal mean of T =50.5 lb./ac.
S.E. of marginal mean of S =29.2 lb./ac.
S.E. of body of table or control mean =71.5 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(MAE).**
Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type V—To study the effect of different sources of N applied at different times.

1. BASAL CONDITIONS

(i) (a) to (c) N.A. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) N.A. (iv) (a) Country ploughing and harrowing. (b) Drilling. (c) 20 lb./ac. (d) 18″×12″. (e) N.A. (v) 20 lb./ac. of P_2O_5 and 5,000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(MAE) on cotton crop on page 276.

5. RESULTS :

(i) 853 lb./ac. (ii) 138.4 lb./ac. (iii) Only the effect of control *vs.* others is significant. (iv) Av. yield of cotton in lb./ac.

Control=580 lb./ac.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
S_1	841	819	897	859	1055	803	879
S_2	864	825	910	847	1080	715	873
Mean	852	822	903	853	1067	759	876

S.E. of marginal mean of T =56.5 lb./ac.
S.E. of marginal mean of S =32.6 lb./ac.
S.E. of body of table on control mean =79.9 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type V—To study the effect of different sources of N applied at different times.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black soil of trap and gneissic origin. (b) N.A. (iii) N.A. (iv) (a) Country plouging and harrowing. (b) Drilling. (c) 20 lb./ac. (d) 18″×12″. (e) N.A. (v) 20 lb./ac. of P_2O_5 and 5,000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(MAE) on page 276.

5. RESULTS :

(i) 277 lb./ac. (ii) 120.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of cotton in lb./ac.

Control=303 lb./ac.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
S_1	341	253	152	372	120	448	281
S_2	354	322	236	217	221	265	269
Mean	347	287	194	294	170	356	275

S.E. of marginal mean of T =49.3 lb./ac.
S.E. of marginal mean of S =28.5 lb./ac.
S.E. of body of table or control mean =69.7 lb./ac.

Crop :- Cotton. **Ref :- Gj. 57(MAE).**

Site :- M.A.E., Farm, Umrala. **Type :- 'M'.**

Object :—Type II—To study long term effects of three levels of N, P, K and 2 levels of bulky manure on fixed two or three course rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Cotton—*Jowar*. (b) Wheat. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) July 1957. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′ between rows (e) N.A. (v) Nil. (vi) C.J.—73 (early). (vii) Unirrigated. (viii) No. (ix) N.A. (x) December 1957.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 2 levels of F.Y.M. : $F_0=0$ and $F_1=5000$ lb./ac.
- (2) 3 levels of N as A/S : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.
- (3) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.
- (4) 3 levels of K_2O as Mur. of potash : $K_0=0$, $K_1=30$ and $K_2=60$ lb./ac.

3. DESIGN :

(i) $3^3\times2$ confd. (ii) (a) 6 blocks/replication ; 9 plots/block. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 24′×12′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1956—contd. (b) Yes. (c) No. (v) N.A. (vi) Nil. (vii) Experiment not laid out according to plan in 1956.

5. RESULTS :

(i) 906 lb./ac. (ii) 132.6 lb./ac. (iii) Only N effect is highly significant. (iv) Av. yield of cotton in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	997	930	814	863	945	933	926	899	916	914
F_1	916	973	802	877	882	933	933	856	903	897
Mean	957	952	808	870	914	933	929	878	910	905
K_0	947	1005	836	914	918	956				
K_1	953	863	817	878	889	865				
K_2	971	987	771	817	935	977				
P_0	893	929	788							
P_1	929	1006	807							
P_2	1048	920	830							

S.E. of N, P or K marginal mean	=31.3 lb./ac.
S.E. of F marginal mean	=25.5 lb./ac.
S.E. of body of N×P, N×K on P×K table	=54.1 lb./ac.
S.E. of body of F×N, F×K on F×P table	=44.2 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—Type II—To study the long term effects of three levels of N, P, K and 2 levels of bulky manure on fixed two or three course rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat—Cotton—*Jowar.* (b) Wheat. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 5.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′ between rows. (e) —. (v) Nil. (vi) C.J.—73 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) 25.98″. (x) 10.12.1959.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(MAE) on page 278.

5. RESULTS :

(i) 262.4 lb./ac. (ii) 101.9 lb./ac. (iii) Only P effect is highly significant. (iv) Av. yield of cotton in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	195.8	223.5	293.2	191.9	295.4	225.2	244.8	223.5	244.1	237.5
F_1	265.9	296.3	299.4	223.8	386.7	251.2	281.9	304.8	274.9	287.2
Mean	230.9	259.9	296.3	207.9	341.0	238.2	263.4	264.2	259.5	262.4
K_0	233.6	214.6	341.9	220.1	271.4	298.6				
K_1	247.4	272.5	272.6	193.9	347.9	250.7				
K_2	211.6	292.5	274.4	209.6	403.7	165.3				
P_0	200.3	204.3	219.0							
P_1	328.0	325.0	370.0							
P_2	164.4	250.3	299.9							

S.E. of N, P or K marginal mean =24.0 lb./ac.
S.E. of F marginal mean =19.6 lb./ac.
S.E. of body of N×P, N×K or P×K table =41.6 lb./ac.
S.E. of body of F×N, F×K or F×P table =34.0 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 55(88).**

Centre :- Bardoli (c.f.). **Type :- 'M'.**

Object :—To find out the response of Cotton under cultivators farming conditions to application of N, P and K.

1. BASAL CONDITIONS .

(i) (a) and (b) *Jowar*. (c) Nil. (ii) Black soil. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 60″×16″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 56.22″. (x) 1st week of Feb. to 1st week of April.

2. TREATMENTS :

0 =Control.
N_1 =20 lb./ac. of N as A/S.
N_2 =40 lb./ac. of N as A/S.
N_1P =20 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super.
N_2P =40 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super.
N_2PK =40 lb./ac. of N as A/S+20 lb./ac. of P_2O_5 as Super+40 lb./ac. of K_2O as Pot. Sul.

Super and Pot. Sul. were applied before sowing and A/S was applied 3 weeks after sowing in 2 doses.

3. DESIGN :

(i) and (ii) Villages were randomly selected and sites in a village were located by randomly selected survey no. Generally 4 villages and 2 sites in each village were taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4 GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering and boll formation etc. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 335.3 lb./ac. (ii) 98.01 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	221.2	298.5	388.9	346.0	374.0	383.2

S.E./mean =33.69 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 55(84).**

Centre :- Chorasi (c.f.). **Type :- 'M'.**

Object :—To find the response of Cotton under cultivator's farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) *Jowar.* (c) Nil. (ii) Black soil. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 60″×12″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 27.99″. (x) From 2nd week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) The villages were randomly selected and sites in a village were located by a randomly selected survey no. Generally 3 villages and 2 sites in each village are taken. (iii) (a) 52′×42′. (b) 36′×30′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering and boll formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 547.6 lb./ac. (ii) 70.18 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *Kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	291.4	432.1	600.0	463.3	691.3	807.7

S.E./mean =31.46 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 55(81).**

Centre :- Kamrej (c.f.). **Type :- 'M'.**

Object :—To find out the response of Cotton under cultivators' farming conditions to applications of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) *Jowar.* (c) 20 to 25 C.L./ac. of F.Y.M. (ii) *Morram.* (iii) Nil. (iv) Cotton—2087. (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 72″×15″ to 18″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 49.60″. (x) From 1st week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) The villages were selected randomly and sites in a village were located by randomly selected survey no. Generally 4 villages and 2 sites in each village are taken. (iii) (a) 52′×42′. (b) 36′×30′ (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height. flowering, boll formation etc. (iv) (a) 54—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 478.3 lb./ac. (ii) 94.00 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	483.7	488.1	493.2	492.5	478.0	434.3

S.E./mean =33.07 lb./ac.

Crop :- Cotton *(Kharif)* **Ref :- Gj. 55(82).**

Centre :- Mandsi (c.f.). **Type :- 'M'.**

Object :—To find out the response of Cotton under cultivators' farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) *Jowar.* (c) Nil. (ii) Medium black. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) Varies from 12″×42″ to 12″×70″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 59.94″. (x) From 2nd week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3, DESIGN :

(i) and (ii) The villages were randomly selected and the sites in a village were located by randomly selected survey no. Generally 2 villages and 2 sites in each village are taken. (iii) (a) 52′×41′. (b) 36′×30′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (b) Nil. (iii) Growth, height, flowering and boll formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 319.0 lb./ac. (ii) 65.74 lb./ac. (iii) Treatments do not differ significantly. (vi) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	290.6	305.0	292.5	320.3	341.6	364.2

S.E./mean ±32.87 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 55(86).**

Centre :- Mahuwa (c.f.). **Type :- 'M'.**

Object :—To find out the response of Cotton under cultivators' farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) *Jowar.* (c) Nil. (ii) Medium black and *Goradu.* (iii) Nil. (iv) Cotton—2087. (v) (a) Ploughing and harrowing. (b) and (c) Nil. (d) 36″ to 60″×12″ to 18″. (e) Nil. (vi) 3rd week of June to 1st week of July. (vii) Unirrigated. (viii) Weeding. (ix) 54.65″. (x) 2nd week of Feb. to first week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) Villages were randomly selected and the sites in a village were located by randomly selected survey no. Generally 6 villages and 2 sites in each village are taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Growth, height, flowering and boll formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 456.8 lb./ac. (ii) 136.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	407.3	482.7	547.1	343.4	552.2	407.9

S.E./mean 68.36 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 55(85).**

Centre :- Mangool (c.f.). **Type :- ‘M’.**

Object :—To find out the response of cotton under cultivators’ farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) *Jowar* in five villages and *Kodra* in one village. (c) Nil. (ii) Black. (iii) Nil. (iv) Improved. cotton—2087. (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 60″ to 84″×15″ to 18″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 49.01″. (x) From 1st week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) The villages were selected randomly and the sites were located by randomly selected survey no. Generally 6 villages and 2 sites in a village were taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering and boll-formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nill.

5. RESULTS :

(i) 449.6 lb./ac. (ii) 40.72 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	379.7	402.0	461.7	424.4	489.3	540.6

S.E./mean =11.70 lb./ac

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 55(78).**

Centre :- Nawsari (c.f.). **Type :- ‚M’.**

Object :—To find out the response of Cotton under cultivators’ farming conditions to applications of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) Cotton in two villages and *Jowar* in other. (c) Nil. (ii) Black. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) Varies from 50″×26″ to 54″×24″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 49.34″. (x) From 2nd week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) Villages were selected randomly and sites in a village were located by randomly selected survey no. No. of villages 4 and number of sites in each village N.A. (iii) (a) 52′×42′. (b) 36′×30′. (v) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering and boll-formation. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 502.8 lb /ac. (ii) 88.73 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	426.4	484.7	558.8	495.4	530.7	521.0

S.E./mean =31.46 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 55(89).**

Centre :- Olpad. (c.f.). **Type :- 'M'.**

Object :—To find out the response of Cotton under cultivators' farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) Cotton in two villages and *Jowar* in others. (c) Nil. (ii) Black. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 72″×12″ to 18″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 25.85″. (x) 1st week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) Villages were randomly selected and sites were located in each village by randomly selected survey nos. Generally 6 villages and 2 sites in each village were taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering and boll-formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 878.8 lb./ac. (ii) 156.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	559.3	674.8	1008.1	688.1	1100.4	1222.3

S.E./mean =45.17 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 55(80).**

Centre :- Palsana (c.f.). **Type :- 'M'.**

Object .—To find out the response of Cotton under cultivators' farming conditions to application of N,P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) *Jowar.* (c) Nil. (ii) Black. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 72″×18″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 47.49″. (x) From 1st week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) The villages were selected randomly. The sites in a village were located by randomly selected survey no. Generally 2 villages and 2 sites in each village were taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Growth, height, flowering and boll-formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 411.5 lb./ac. (ii) 80.67 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	313.3	371.9	497.3	387.0	466.5	433.0

S.E./mean =40.33 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 55(87).**

Centre :- Songadh (c.f.). **Type :- 'M'.**

Object :—To find out the response of Cotton under cultivators' farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) Cotton. (c) Nil. (ii) Deep black. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 27″ to 36″×12″. (e) N.A. (vi) 2nd and 3rd week of June. (vii) Unirrigated. (viii) Nil. (ix) 72.14″. (x) 1st week of March to 2nd week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) Villages were randomly selected. The site in a village was located by randomly selected survey no. Generally 2 villages and 2 sites in each village were taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering, boll-formation etc. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 391.2 lb./ac. (ii) 74.62 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	297.0	373.2	431.2	431.1	363.0	451.9

S.E./mean =37.31 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 55(79).**

Centre :- Valod. (c.f.). **Type :- 'M'.**

Object :—To find out the response of Cotton under cultivators' farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) Cotton. (c) 10 C.L./of F.Y.M./ac. in one village and in others—Nil. (ii) Medium black to loamy. (iv) Cotton—2087. (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 60″×18″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) Weeding. (ix) 64.57″. (x) From 2nd week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) Villages were selected randomly and sites in a village were located by randomly selected survey no. Generally 2 villages and 2 sites in each village were taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering and boll-formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 142.5 lb./ac. (ii) 32.27 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	109.7	121.2	118.6	124.8	194.0	186.5

S.E./mean =22.59 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 55(83).**

Centre :- Vyara (c.f.). **Type :- 'M'.**

Object :—To find out the response for Cotton under cultivators' farming conditions to application of N, P and K.

1. BASAL CONDITIONS :

(i) (a) and (b) Cotton in two villages and *Jowar* in one village (c) Nil. (ii) Black. (iii) Nil. (iv) Cotton—2087 (improved). (v) (a) Ploughing and harrowing. (b) and (c) N.A. (d) 60″×12″ to 18″. (e) N.A. (vi) From last week of June to 2nd week of July. (vii) Unirrigated. (viii) —. (ix) 75.10″. (x) From 1st week of Feb. to 1st week of April.

2. TREATMENTS :

Same as in expt. no. 55(88) on page 280.

3. DESIGN :

(i) and (ii) The villages were selected randomly and sites in a village were located by randomly selected survey nos. Generally 3 village and 2 sites in each village were taken. (iii) (a) 52′×42′. (b) 36′×30′. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Growth, height, flowering and boll-formation. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 318.6 lb./ac. (ii) 36.30 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	0	N_1	N_2	N_1P	N_2P	N_2PK
Av. yield	301.8	282.4	359.8	300.4	331.2	335.8

S.E./mean =13.71 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 55(34).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable dates of sowing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Sann green manure. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Two harrowings. (b) Dibbling. (c) N.A. (d) 3′×5′. (e) 4 seeds per dibble. (v) Nil. (vi) 170—Co. 2. (vii) Irrigated. (viii) Two interculturings. (ix) 13.75″. (x) 1.2.1956, 15.2.1956. and 5.3.1956.

2. TREATMENTS:

5 dates of sowing : D_1=15.5.1955., D_2=1.6.1955., D_3=15.6.1955., D_4=1.7.1955 and D_5=15.7.1955.

3. DESIGN :

(i) L.Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Light attack of top-borers, black-arm and semi-loopers. (iii) *Kapas* yield. (iv) (a) 1955—N.A. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 801 lb./ac. (ii) 92.36 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	1029	886	889	652	547

S.E./mean =41.29 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 56(33).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable dates of sowing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Two ploughings and 1 harrowing. (b) Dibbling. (c) 4 lb./ac. (d) 3′×5′. (e) 6 seeds per dibble. (v) 75 lb./ac. of N at sowing, 250 lb./ac. of N top-dressed and 16 lb./ac. of P_2O_5 drilled. (vi) 170—Co. 2. (vii) Irrigated. (viii) One interculturing. (ix) 33.75″. (x) 19, 20.2.1957; 8.3.1957.

TREATMENTS .

5 dates of sowing : D_1=15.5.1956., D_2=1.6.1956., D_3=15.6.1956., D_4=1.7.1956., D_5=15.7.1956.
Due to continuous rains D_4 was not sown and hence dropped. Expt. analysed as R.B.D.

3. DESIGN :

(i) L.Sq. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Moderate attack of jassids, aphids and boll-worm. (iii) *Kapas* yield. (iv) (a) 1955—N.A. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 673 lb./ac. (ii) 98.33 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	D_1	D_2	D_3	D_5
Av. yield	657	736	682	617

S.E./mean =43.9 lb./ac.

Crop :- Cotton. **Ref :- Gj. 57(38).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable dates of sowing and spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 200 lb./ac. each of Super, A/S and manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Ploughings and harrowings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) 170—Co. 2. (vii) Irrigated. (viii) Gap-filling, interculturing and weeding. (ix) 15.09″. (x) 18.12.1957 and 25 1.1958.

2. TREATMENTS :

Main-plot treatments :

3 spacings between plants : $S_1=3'$, $S_2=4'$ and $S_3=5'$.

Sub-plot treatments :

5 dates of sowing : D_1=15.5.1957, D_2=1.6.1957, D_3=15.6.1957, D_4=4.7.1957 and D_5=18.7.1957. Spacing between rows is 3′.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Light attack of black-arm, semi-loopers, aphids and jassids. (iii) Height, width and number of bolls/plant. (iv) (a)1957—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 412 lb./ac. (ii) (a) 124.6 lb./ac. (b) 110.5 lb./ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	536	560	409	272	259	407
S_2	565	595	418	312	222	422
S_3	522	514	460	242	299	407
Mean	541	556	429	272	260	412

S.E. of difference of two

1.	S marginal means	=39.31 lb./ac.
2.	D marginal means	=44.97 lb./ac.
3.	D means at the same level of S	=78.14 lb./ac.
4.	S means at the same level of D	=80.29 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(73).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable dates of sowing and spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Groundnut. (c) 200 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) N.A. (d) As per treatments. (e) N.A. (v) 20 C.L./ac. of compost. (vi) 170—Co. 2. (vii) Irrigated. (viii) N.A. (ix) 13″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 spacings between plants : $S_1=3'$, $S_2=4'$ and $S_3=5'$.

Sub-plot treatments :

5 dates of sowing : D_1=15.5.1958, D_2=1.6.1958, D_3=15.6.1958, D_4=1.7.1958 and D_5=15.7.1958. Spacing between rows is 3′.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40′×12′. (b) 34′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of shoot-borer and black-arm. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 791 lb./ac. (ii) (a) 161.2 lb./ac. (b) 198.2 lb./ac. (iii) Main effect of D is highly significant. Interaction S×D is significant. Main effect of S is not significant. (iv) Av. yield of *kapas* in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	1001	1267	860	561	539	846
S_2	1014	1019	698	527	441	754
S_3	1360	794	767	474	469	773
Mean	1125	1051	775	521	483	791

S.E. of difference of two

1. S marginal means = 50.98 lb./ac.
2. D marginal means = 80.89 lb./ac.
3. D means at the same level of S =140.1 lb./ac.
4. S means at the same level of D =135.4 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :. Gj. 59(14).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :— To find out suitable dates of sowing and spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cumin in *Rabi* and groundnut in *Kharif.* (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 2 to 3 seeds/dibble. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) Three interculturings and 4 weedings. (ix) 34″. (x) 6.11.1959.

2. TREATMENTS and 3 DESIGN :

Same as in expt. no. 58(73) on page 288.

4. GENERAL :

(i) Good. (ii) Light attack of grass hopper, shoot-borer and red cotton bugs ; spray of endrine. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 425 lb./ac. (ii) (a) 113.7 lb./ac. (b) 117.7 lb./ac. (iii) Main effect of D alone is highly significant. No other effect is significant. (iv) Av. yield of *kapas* in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	709	558	396	343	252	452
S_2	620	457	449	247	290	413
S_3	634	645	369	195	210	411
Mean	654	553	405	262	251	425

S.E. of difference of two

1. S marginal means =35.95 lb./ac.
2. D marginal means =48.03 lb./ac.
3. D means at the same level of S =83.20 lb./ac.
4. S means at the same level of D =82.64 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 54(48).**

Site :- Agri. Res. Stn. Halvad. **Type :- 'C'.**

Object :—To find out the optimum spacing under irrigated conditions for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 15.7.1954. (iv) (a) 1 harrowing. (b) Drilling. (c) 8 lb./ac. (d) As per treatments. (e) N.A. (v) 14.5 lb./ac. of Super drilled with seed. (vi) Co_2—170. (vii) Irrigated. (viii) Two interculturings. (ix) N.A. (x) 5, 18.1.1955 ; 7, 18.2.1955.

2. TREATMENTS :

4 spacings between plants : $S_1=3'$, $S_2=4'$, $S_3=5'$ and $S_4=6'$.
Spacing between rows is 3′.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 66′×24′. (b) 60′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Light attack of white ants. (iii) *Kapas* yield. (iv) (a) 1954—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 369 lb./ac. (ii) 53.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_1	S_2	S_3	S_4
Av. yield.	351	398	350	378

S.E./mean =26.6 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 55(37).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable number of plants per hill and spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 25.6.1955. (iv) (a) One ploughing and 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 3, 5, 7, 11 seeds/dibble. (v) 50 lb./ac. of P_2O_5 broadcast before sowing. (vi) Co_2—170. (vii) Irrigated. (viii) 4 interculturings. (ix) 13.75″. (x) 14.3.1956 and 2.4.1956.

2. TREATMENTS :

Main-plot treatments :

3 spacings between plants : $S_1=3'$, $S_2=4'$ and $S_3=5'$.

Sub-plot treatments :

No. of plants/hill : $A_1=1$, $A_2=2$, $A_3=3$ and $A_4=4$ plants/hill.

Spacing between rows is 3′.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Light attack of Jassids and aphids and two sprayings of Geigy—1250. (iii) *Kapas* yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 820.2 lb./ac. (ii) (a) 67.15 lb./ac. (b) 119.2 lb./ac. (iii) Main effect of S is highly significant. No other effect is significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	Mean
A_1	778	814	724	772
A_2	906	818	711	812
A_3	957	833	770	853
A_4	982	820	729	844
Mean	906	821	734	820.2

S.E. of difference of two

1. S marginal means	=23.74 lb./ac.
2. A marginal means	=48.68 lb./ac.
3. A means at the same level of S	=84.31 lb./ac.
4. S means at the same level of A	=76.77 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(124).**
Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable number of plants per hill and spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Wheat—Cotton. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 27.6.1957. (iv) (a) One ploughing and 1 harrowing. (b) Dibbling. (c) N.A. (d) and (e) As per treatments. (v) Nil. (vi) Co$_2$—170. (vii) Irrigated. (viii) Three weedings. (ix) 15.09". (x) 6.1.1958.

2. TREATMENTS :

Main-plot treatments :
4 spacings between plants : $S_1=9''$, $S_2=18''$, $S_3=27''$ and $S_4=36''$.
Sub-plot treatments :
No. of plants/hill : $A_1=1$, $A_2=2$, $A_3=3$ and $A_4=4$ plants/hill.
Spacing between rows is 3′.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40′×12′. (b) 34′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Light attack of Jassids and aphids. (iii) Seed cotton. (iv) (a) and (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) Hard crust was formed due to heavy rains immediately after dibbling and hence the poor yield. (vii) Nil.

5. RESULTS :

(i) 540 lb./ac. (ii) (a) 64.06 lb./ac. (b) 78.68 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	S_4	Mean
A_1	578	509	450	559	524
A_2	502	572	532	552	539
A_3	532	539	585	551	552
A_4	502	509	629	539	545
Mean	529	532	549	550	540

S.E. of difference of two

1. S marginal means	=45.30 lb./ac.
2. A marginal means	=55.63 lb./ac.
3. A means at the same level of S	=55.64 lb./ac.
4. S means at the same level of A	=53.24 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(120).**

Site :- Dry Farming Res. Stn., Jamkhambalia. **Type :- 'C'.**

Object :—To find out the suitable spacing and seed rate for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Medium shallow. (b) N.A. (iii) 13.7.1959. (iv) (a) One ploughing and 2 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) CJ—73. (vii) Unirrigated. (viii) Three interculturings and 2 weedings. (ix) 44". (x) 2, 9.4.1960 and 8.5.1960.

2. TREATMENTS :

Main-plot treatments :

Three spacings between rows : $S_1=18''$, $S_2=27''$ and $S_3=36''$.

Sub-plot treatments :

Three seed rates : $R_1=10$, $R_2=15$ and $R_3=20$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) 275'×280' (iii) 6. (iv) (a) 45'×30'. (b) 39'×24'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Shoot borer attack. (iii) *Kapas* yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 210 lb./ac. (ii) (a) 72.96 lb./ac. (b) 66.06 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	R_1	R_2	R_3	Mean
S_1	211	219	248	226
S_2	192	213	227	211
S_3	196	190	194	193
Mean	200	207	223	210

S.E. of difference of two

1. S marginal means	=24.32 lb./ac.
2. R marginal means	=22.02 lb./ac.
3. R means at the same level of S	=38.14 lb./ac.
4. S means at the same level of R	=39.52 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 59(121).**

Site :- Dry Farming Res. Stn., Jamkhambalia. **Type :- 'C'.**

Object :—To study the effect of interculturings on Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 13.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 15 lb./ac. (d) and (e) N.A. (v) Nil. (vi) CJ—73. (vii) Unirrigated. (viii) As per treatments. (ix) 44". (x) 2, 9.4.1960 and 8.5.1960.

2. TREATMENTS :

1. No interculturing.
2. 1 interculturing 6 weeks after sowing.
3. 2 interculturings 4 and 6 weeks after sowing.
4. 3 interculturings 4, 6 and 8 weeks after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 197'×100' (iii) 6. (iv) (a) 30'×24'. (b) 24'×18'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Red cotton bug attack. (iii) *Kapas* yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 153.2 lb./ac. (ii) 83.52 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4
Av. yield	183.1	138.1	181.0	110.7

S.E./mean =48.22 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 56(93).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To study the effect of topping on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) —. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) 20 lb./ac. (d) 3′ between rows. (e) N.A. (v) Nil. (vi) *Pratap*. (vii) Unirrigated. (viii) and (ix) N.A. (x) 6.12.1956 and 22.1.1957.

2. TREATMENTS :

1. Control
2. Topping and removing the topped material.
3. Topping and allowing the topped material in the field.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 12′×18′. (b) 6′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Seed cotton. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 303 lb./ac. (ii) 36.58 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	275	312	321

S.E./mean =21.12 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(113).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To study the effect of topping on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 8.7.1957. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) 3′ between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 34″. (x) 14.11.1957 and 16.12.1957.

2. TREATMENTS :

Same as in expt. no. 56(93) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 24′×15′. (b) 20′×9′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Seed cotton. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1678 lb./ac. (ii) 205.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	1632	1616	1787

S.E./mean =118.8 lb./ac.

Crop :- Cotton. **Ref :- Gj. 54(58).**

Site :- Cotton Breeding Sub-Stn., Kodiyadra. **Type :- 'CV'.**

Object :—To find out optimum spacing for different varieties of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—Cotton. (b) Cotton. (c) Nil. (ii) (a) Shallow *goradu.* (b) N.A. (iii) 9.7.1953. (iv) (a) Two to three harrowings after the first shower. (b) Dibbling. (c) 3 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Two to three weedings and 3 to 4 interculturings. (ix) 56.80″. (x) 8.1.1954 to 5.3.1954.

2. TREATMENTS :

All combinations of (1) and (2)

1. 2 varieties : $V_1=E_{22}$ and $V_2=$*Vijay*.
2. 2 spacings : $S_1=2\frac{1}{2}' \times 2'$ and $S_2=5' \times 2'$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 25′×32′. (b) 15′×28′. (v) One row on either side for S_2 and 2 rows on either side for S_1. One dibble at either end of the row. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of leaf roller and boll worm. *Khakhara* disease. (iii) *Kapas* yield. (iv) (a) 1954—N.A. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 433.9 lb./ac. (ii) 52.89 lb./ac. (iii) Main effect of S is highly significant. Effect of V and interaction V×S are significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	Mean
V_1	475.4	439.1	457.2
V_2	471.9	349.2	410.5
Mean	473.6	394.1	433.9

S.E. of any marginal mean =15.27 lb./ac.
S.E. of body of table =21.57 lb./ac.

Crop :- Cotton. **Ref :- Gj. 54(12).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object :—To find out optimum spacing and combination of N and P for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—Groundnut (*Kharif*)—Wheat. (b) *Udid* over *Kharif* groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 6.7.1954 to 8.7.1954. (iv) (a) 2 harrowings and ploughing, levelling and marking. (b) Dibbling. (c) 15 to 20 lb./ac. (d) As per treatments. (e) 4 to 5 seeds/hole. (v) 5 C.L./ac. of F.Y.M. during June before preparatory tillage by broadcasting. (vi) *Pratap* (medium). (vii) Unirrigated. (viii) 3 to 4 interculturings and weedings. (ix) 26.70″. (x) 5.12.1954. to 27.12.1954 and 18.1.1955.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S and G.N.C.(1 : 1) : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.

Sub-plot treatments :

3 spacings between rows : $S_1=12''$, $S_2=18''$ and $S_3=24''$.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 63′×16′ for S_1 and S_3 and 63′×15′ for S_2 (b) 60′×12′. (v) One row for S_2 and S_3 and 2 rows for S_1 on either side and 1.5′ at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 326.4 lb./ac. (ii) (a) 165.8 lb./ac. (b) 62.64 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean	S_1	S_2	S_3
P_0	183.6	346.0	410.6	313.4	358.9	310.8	270.5
P_1	329.4	274.8	322.1	308.8	358.2	315.0	253.1
P_2	337.8	345.4	387.9	357.0	422.4	331.6	317.2
Mean	283.6	322.1	373.5	326.4	379.8	319.1	280.3
S_1	338.7	370.9	429.9				
S_2	278.6	318.2	360.6				
S_3	233.6	277.2	330.0				

S.E. of difference of two.

1. N or P marginal means	=39.08 lb./ac.
2. S marginal means	=14.76 lb./ac.
3. S means at the same level of N or P	=25.57 lb./ac.
4. N or P means at the same level S	=44.34 lb./ac.
S.E. of body of N×P table	=47.86 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(71).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object :—To find out optimum spacing and combination of N and P for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 35 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 8.7.1958. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) CJ—73. (vii) Unirrigated. (viii) N.A. (ix) 28.50″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

6 spacings : S_1=18″×6″, S_2=18″×9″, S_3=27″×6″, S_4=27″×9″, S_5=36″×6″ and S_6=36″×9″.

Sub-plot treatments :

3 manurial doses : M_0=Control. M_1=20 lb./ac. of N+10 lb./ac. of P_2O_5. M_2=40 lb./ac. of N+20 lb./ac. of P_2O_5.

Time, method of application and source of manure—N.A.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 30′×24′. (b) 27′×18′. (v) 1.5′×3′. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1958—1960. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 280 lb./ac. (ii) (a) 79.05 lb./ac. (b) 52.43 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_0	242	311	230	230	215	206	239
M_1	360	248	288	276	278	291	290
M_2	294	344	300	348	342	236	311
Mean	299	301	273	285	278	244	280

S.E. of difference of two

1. S marginal means =37.26 lb./ac.
2. M marginal means =17.47 lb./ac.
3. M means at a level of S =42.80 lb./ac.
4. S means at a level of M =51.09 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(54).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object :—To find out optimum spacing and combination of N and P for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 30 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 12.7.1959. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) CJ—73. (vii) Unirrigated. (viii) N.A. (ix) 45.56″. (x) N.A.

2. TREATMENTS and 3. DESIGEN :

Same as in expt. no. 58(71) on page 295.

4. GENERAL :

(i) Low yield due to adverse climatic conditions. (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 64.8 lb./ac. (ii) (a) 25.10 lb./ac. (b) 38.6 lb./ac. (iii) Main effect of S is significant. Effect of M is highly significant. No other effect is significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_0	26.9	14.0	15.5	29.0	30.5	34.6	25.1
M_1	35.8	32.9	17.9	49.6	61.8	81.0	46.5
M_2	118.0	121.0	79.8	112.0	145.8	161.0	122.9
Mean	60.2	56.0	37.7	63.5	79.4	92.2	64.8

S.E. of difference of two
1. S marginal means =11.83 lb./ac.
2. M marginal means =12.87 lb./ac.
3. M means at a level of S =31.50 lb./ac.
4. S means at a level of M =26.04 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(84).**

Site :- Trial-cum-Demonstration. Farm, Bardoli. **Type :- 'CM'.**

Object :—To study the effect of inorganic and organic manures along with spacing on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram and *Jowar*. (c) Nil. (ii) (a) Black. (b) Refer soil analysis, Bardoli. (iii) 22.7.1958. (iv) (a) Two harrowing and ploughings. (b) Dibbling. (c) and (d) N.A. (e) 2 to 3 seeds/dibble. (v) Nil. (vi) Cotton—2087 (late). (vii) Irrigated. (viii) 8 interculturings. (ix) 68.23″. (x) 18.3.1959, 31.3.1959, 18.4.1959 and 4.5.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2), (3) and (4)
(1) 2 levels of P_2O_5 : P_0=0 and P_1=60 lb./ac.
(2) 2 levels of K_2O : K_0=0 and K_1= 120 lb./ac.
(3) 2 spacings between rows : S_1=3′ and S_2=4′.
(4) 2 doses of F.Y.M. : F_0=0 and F_1=10 C.L./ac.

Sub-plot treatments :

3 levels of N : N_0=30, N_1=60 and N_2=90 lb./ac.
Spacing between plants is 2′.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 sub-plots/main-plot, 8 main-plots/block ; 2 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 24′×44′. (b) 12′×36′. (v) 6′×4′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 891 lb./ac. (ii) (a) 160.1 lb./ac. (b) 100.8 lb./ac. (iii) Main effects of F is significant and effect N is highly significant. No other effect is significant. (iv) Table of mean and differential responses.

Differential response

	Mean response	P		K		S		F	
		−	+	−	+	−	+	−	+
P	−20.14	—	—	−15.75	−24.53	0.26	−40.54	−39.15	−1.13
K	−40.98	−36.59	−45.37	—	—	−51.84	−30.12	−83.85	1.89
S	−78.92	−58.52	−99.32	−89.78	−68.06	—	—	−103.10	−54.74
F	+55.52	36.51	74.53	12.65	98.39	31.34	79.70	—	—

S.E. of mean response =32.69 lb./ac.
S.E. of differential response =46.23 lb./ac.

	P_0	P_1	K_0	K_1	S_1	S_2	F_0	F_1	Mean
N_0	828	803	847	783	856	774	766	864	815
N_1	944	901	941	903	975	860	900	944	922
N_2	933	940	947	925	960	912	924	948	936
Mean	901	881	912	870	930	852	863	919	891

S.E. of difference of two

1. N marginal means =25.20 lb./ac.
2. N means at the same level of P, K, S or F =35.64 lb./ac.
3. P, K, S or F means at the same level of N =43.76 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(76).**

Site :- Trial-cum-Demonstration Farm, Bardoli. **Type :- 'CM'.**

Object :—To study the effect of inorganic and organic manures along with spacing on the yield of Cotton

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 5 C.L. of F.Y.M.+6 C.L. of press *mud*+300 lb. of G.N.C. +100 lb. of A/S+100 lb. of Super to whole experiment. (ii) (a) Black. (b) Refer soil analysis, Bardoli. (iii) 30.6.1959. (iv) (a) Three ploughings. (b) Dibbling. (c) and (d) N.A. (e) 2 to 3 seeds/dibble (v) Nil. (vi) Cotton—2087. (vii) Irrigated. (viii) 6 interculturings and 3 weedings. (ix) 100″. (x) 11.3.1960.

2. TREATMENTS :

Main-plot treatments :
All combinations of (1), (2), (3) and (4)

(1) 2 levels of P_2O_5 : $P_0=0$ and $P_1=60$ lb./ac.
(2) 2 levels of K_2O : $K_0=0$ and $K_1=120$ lb./ac.
(3) 2 spacings between rows : $S_1=3'$ and $S_2=4'$.
(4) 2 doses of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

Sub-plot treatments :
4 levels of N : $N_0=0$. $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 2 blocks/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 24′×44′. (b) 12′×36′. (v) 6′×4′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1958—contd. (modified in 1959) (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 457 lb./ac. (ii) (a) 201.5 lb./ac. (b) 113.0 lb./ac. (iii) Main effect of N and interaction K×S are highly significant. No other effect is significant. (iv) Table of mean and differential responses.

Differential response

Mean response		P		K		S		F	
		−	+	−	+	−	+	−	+
P	27.99	—	—	78.54	−22.56	53.18	2.80	6.77	49.21
K	37.32	87.87	−13.23	—	—	−72.13	146.77	76.59	−1.95
S	14.16	39.35	−11.03	−95.29	123.61	—	—	17.99	10.33
F	60.32	39.10	81.54	99.59	21.05	64.15	56.49	—	—

S.E. of mean response =35.61 lb./ac.
S.E. of differential response =50.36 lb./ac.

	P_0	P_1	K_0	K_1	S_1	S_2	F_0	F_1	Mean
N_0	290	340	314	317	280	351	294	337	316
N_1	427	389	393	424	408	408	374	442	408
N_2	501	562	498	564	510	553	490	573	532
N_3	554	595	548	599	602	545	550	597	574
Mean	443	471	438	476	450	464	427	487	457

S.E. of difference two

1. N marginal means	=28.26 lb./ac.
2. N means at a level of P, K, S or F	=39.95 lb./ac.
3. P, K, S, or F means at a level of N	=49.66 lb./ac.

Crop :- Cotton. **Ref :- Gj. 55(35).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To find out suitable doses of fertilizers along with spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 23.6.1955. (iv) (a) One ploughing and 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 3 seeds/dibble. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) Four interculturings. (ix) 13.75″. (x) 13.2.1956, 4 and 29.3.1956.

2. TREATMENTS :

Main-plot treatments :

3 spacings : $S_1=3' \times 3'$, $S_2=3' \times 4'$ and $S_3=3' \times 5'$.

Sub-plot treatments :

M_0=Control.
M_1=30 lb./ac. of N+20 lb./ac. of P_2O_5.
M_2=30 lb./ac. of N+40 lb./ac. of P_2O_5.
M_3=60 lb./ac. of N+40 lb./ac. of P_2O_5.
M_4=60 lb./ac. of N+60 lb./ac. of P_2O_5.
M_5=90 lb./ac. of N+60 lb./ac. of P_2O_5.

N as A/S top dressed and P_2O_5 as Super applied before sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of Jassids aphids and top borer. 2 sprayings of Geizy—1250. (iii) *Kapas* yield. (iv) (a) 1955—N.A. (mondified in 1956). (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 744 lb./ac. (ii) (a) 138.1 lb./ac. (b) 114.6 lb./ac. (iii) Interaction M×S alone is highly significant. (iv) Av yield of *kapas* in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	Mean
S_1	380	662	799	860	914	997	769
S_2	373	603	800	828	964	1002	762
S_3	372	546	792	813	842	834	700
Mean	375	604	797	834	907	944	744

S.E. of difference of two

1. S marginal means	=46.05 lb./ac.
2. M marginal means	=53.99 lb./ac.
3. M means at the same level of S	=93.30 lb./ac.
4. S means at the same level of M	=96.96 lb./ac.

Crop :- Cotton. **Ref :- Gj. 56(34).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object .—To find out suitable doses of fertilizers along with spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) 200 lb./ac. of Super+300 lb./ac. of A/S. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 12.7.1956. (iv) (a) One ploughing and 2 harrowings. (b) Dibbling. (c) 24, 12, 9 and 6 lb./ac. for S_1, S_2, S_3 and S_4 respectively. (d) As per treatments. (e) N.A. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) Four interculturings. (ix) 33.75″. (x) 1.3.1957 and 14.3.1957.

2. TREATMENTS :

Main-plot treatments :

4 spacings : $S_1=3'\times9''$, $S_2=3'\times18''$, $S_3=3'\times27''$ and $S_4=3'\times36''$.

Sub-plot treatments :

M_0=Control.
M_1=30 lb./ac. of N+30 lb./ac. of P_2O_5.
M_2=60 lb./ac. of N+30 lb./ac. of P_2O_5.
M_3=60 lb./ac. of N+60 lb./ac. of P_2O_5.

N applied as A/S top dressed and P_2O_5 as Super before sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40′×12′ (b) 34′×6′. (v) 3′×3′. (vii) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of jassids and aphids. (iii) *Kapas* yield. (iv) (a) 1955—N.A. (modified in 1956). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 797 lb./ac. (ii) (a) 207.5 lb./ac. (b) 119.2 lb./ac. (iii) Effect of M alone is highly significant. (iv) Av yield of *kapas* in lb./ac.

	S_1	S_2	S_3	S_4	Mean
M_0	425	406	520	586	484
M_1	602	702	765	775	711
M_2	1079	887	908	1017	973
M_3	1077	970	1005	1023	1019
Mean	796	741	799	850	797

S.E. of difference of two

1. S marginal means = 73.40 lb./ac.
2. M marginal means = 42.14 lb./ac.
3. M means at the same level of S = 84.29 lb./ac.
4. S means at the same level of M =103.5 lb./ac.

Crop :- Cotton. **Ref :- Gj. 57(39).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To find out suitable doses of fertilizers along with spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 5.7.1957. (iv) (a) Preparatory tillage, ploughing and harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) Gap-filling, interculturing and weeding. (ix) 15.09″. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(34) above.

4. GENERAL :

(i) Satisfactory. (ii) Slight attack of aphids, jassids, red-leaf and black-arm diseases. (iii) Height and width of plants, no. of bolls/plant, etc. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 442 lb./ac. (ii) (a) 108.9 lb./ac. (b) 110.9 lb./ac. (iii) Effect of M alone is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	S_4	Mean
M_0	462	403	327	286	370
M_1	386	447	455	391	420
M_2	439	431	519	440	457
M_3	506	520	514	539	520
Mean	448	450	454	414	442

S.E. of difference of two

1. S marginal means	=44.43 lb./ac.
2. M marginal means	=45.26 lb./ac.
3. M means at the same level of S	=90.11 lb./ac.
4. S means at the same level of M	=90.57 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(27).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To find out suitable doses of fertilizers along with spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Groundnut. (c) 20 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 28.7.1958. (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 5 lb./ac. (d) As per treatments. (e) —. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 2 interculturings and 3 weedings. (ix) 13.1″. (x) 28.1.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(34) on page 300.

4. GENERAL :

(i) Good. (ii) Attack of black-arm and shoot-borer disease. (iii) *Kapas* yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 579 lb./ac. (ii) (a) 108.2 lb./ac. (b) 66.94 lb./ac. (iii) Effect of M and interaction M×S are significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	S_4	Mean
M_0	446	441	414	413	428
M_1	641	594	488	416	535
M_2	686	648	673	557	641
M_3	808	708	584	751	713
Mean	645	598	540	534	579

S.E. of difference of two

1. S marginal means	=44.15 lb./ac.
2. M marginal means	=27.32 lb./ac.
3. M means at the same level of S	=54.65 lb./ac.
4. S means at the same level of M	=64.70 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(91).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'.**

Object :—To find out suitable doses of fertilizers along with spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 13.7.1958. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 5 lb./ac. (d) As per treatments. (e) 1 plant/hill after thinning. (v) Nil. (vi) Co_2—170. (vii) Unirrigated. (viii) 1 interculturing. (ix) 33.27″. (x) 1.5.1959.

2. TREATMENTS :

Main-plot treatments :

2 spacings : $S_1=3' \times 2'$ and $S_2=4' \times 2'$.

Sub-plot treatments :

3 doses of manure : M_0=control, M_1=10 C.L./ac. of F.Y.M. broadcast before sowing and M_2=Sann green manure buried in lines.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) 90′×36′. (iii) 4. (iv) (a) 40′×12′. (b) 36′×12′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 780 lb./ac. (ii) (a) 271.4 lb./ac. (b) 143.0 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	M_0	M_1	M_2	Mean
S_1	1011	708	869	863
S_2	809	514	771	698
Mean	910	611	820	780

S.E. of difference of two

1.	S marginal means	=110.8 lb./ac.
2.	M marginal means	= 71.50 lb./ac.
3.	M means at the same level of S	=101.0 lb./ac.
4.	S means at the same level of M	=138.2 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(89).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'.**

Object :—To find out suitable doses of fertilizers along with spacing for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 4.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 3 to 4 seeds/dibble. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 2 interculturings and 1 thinning. (ix) 57.54″. (x) 1.5.1960.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(91) above.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Yield of seed cotton. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 258 lb./ac. (ii) (a) 95.99 lb /ac. (b) 88.13 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	M_0	M_1	M_2	Mean
S_1	277	298	262	279
S_2	269	218	224	237
Mean	273	258	243	258

S.E. of difference of two

1. S marginal means =39.19 lb./ac.
2. M marginal means =44.07 lb./ac.
3. M means at the same level of S =62.32 lb./ac.
4. S means at the same level of M =64.22 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(114).**

Site :- Agri. Res. Stn., Kholwad. **Type :- 'CM'.**

Object :—To study the response of Cotton under irrigated conditions to graded dose of manures and spacings.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 23.6.1958. (iv) (a) 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 3 seeds/dibble. (v) Nil. (vi) Cotton—2087 (medium). (vii) Irrigated. (viii) Two weedings. (ix) 69.49″. (x) 13.2.1959, 21.2.1959, 11.3.1959 and 29.3.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2), (3) and (4).

(1) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=60$ lb./ac.
(2) 2 levels of K_2O as Mur. of Pot. : $K_0=0$, $K_1=120$ lb′/ac.
(3) 2 spacings between rows : $S_1=3$ and $S_2=4'$.
(4) 2 levels of F.Y.M. : $F_0=0$, $F_1=10$ C.L./ac.

Sub-plot treatments :

3 levels of N as A/S : $N_0=30$, $N_1=60$ and $N_2=90$ lb./ac.

P_2O_5 and K_2O applied in bands on 7.7.1958. and 23.7.1958.
N also applied in bands on 4, 5.9.1958. F.Y.M. applied on 17.6.1958. and 19.6.1958.
Spacing between plants is 2′.

3. DESIGN :

(l) Split-plot. (ii) (a) 8 main-plots/block; 2 blocks/replication. 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 44′×24′. (b) 36′×12′. (v) 4′×6′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of boll-worms in June, 1959. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 643 lb./ac. (ii) (a) 84.50 lb./ac. (b) 66.47 lb./ac. (iii) Main effects of F, N and interaction S×N are highly significant. Interaction K×S is significant. All other effects are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	P		K		S		F	
		−	+	−	+	−	+	−	+
P	16.55	—	—	8.69	24.41	14.58	18.52	44.87	−11.77
K	−5.71	−13.57	2.15	—	—	−56.84	45.42	−17.47	6.05
S	17.06	15.09	19.03	−34.07	68.19	—	—	2.44	31.68
F	167.00	195.32	138.68	155.24	178.76	152.38	181.62	—	—

S.E. of mean response =17.25 lb. ac.
S.E. of differential response =24.39 lb./ac.

	P_0	P_1	K_0	K_1	S_1	S_2	F_0	F_1	Mean
N_0	505	506	518	493	483	528	428	583	505
N_1	665	698	688	674	660	703	595	767	681
N_2	735	750	732	754	761	724	655	830	743
Mean	635	651	646	640	635	652	559	727	643

S.E. of difference of two

1. N marginal means =16.62 lb./ac.
2. N means at the same level of P, K, S or F =23.50 lb./ac.
3. P, K, S or F means at the same level of N =25.80 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(80).**

Site :- Agri. Res. Stn., Kholwad. **Type :- 'CM'.**

Object :—To study the effect of inorganic and organic manures along with spacing on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*– Cotton. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 24.6.1958. (iv) (a) 1 harrowing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 3 to 4 seeds/dibble. (v) Nil. (vi) Co$_2$—170. (vii) Irrigated. (viii) 3 interculturings. (ix) 69.49″. (x) 5 pickings on 4.2.1959, 12.2.1959, 18.2.1959, 28.2.1959 and 20.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(114) on page 303.

4. GENERAL :

(i) Normal. (ii) Attack of thrips, mutes etc. Folidol-E 605 was sprayed. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 645 lb./ac. (ii) (a) 155.3 lb./ac. (b) 109.9 lb./ac. (iii) Main effects of P, S, F and N are significant and interaction N×P is highly significant. (iv) Mean and differential responses in lb./ac.

Differential response

Mean response		P		K		S		F	
		−	+	−	+	−	+	−	+
P	161.0	—	—	159	163	160	162	193	129
K	−22.0	−24	−20	—	—	−58	14	−9	−35
S	−109.0	−110	−108	−145	−73	—	—	−73	−147
F	282.0	314	250	295	269	319	245	—	—

S.E. of mean response = 31.69 lb./ac.

S.E. of differential response = 44.82 lb./ac.

	P_0	P_1	K_0	K_1	S_0	S_1	F_0	F_1	Mean
N_0	496	597	540	552	581	512	447	645	546
N_1	557	712	655	613	687	582	480	788	634
N_2	638	868	771	735	830	676	583	923	753
Mean	564	726	655	634	699	590	504	785	644

S.E of difference of two

1. N marginal means =27.5 lb./ac.
2. P, K, S or F marginal means =31.7 lb./ac.
3. P, K, S or F means at the same level of N =44.8 lb./ac.
4. N means at the same level of P, K, S or F =38.9 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(71).**

Site :- Agri. Res. Stn., Kholwad. **Type :- 'CM'.**

Object:—To study the effect of inorganic and organic manures along with spacing on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Sann G.M.+40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) N.A. (iii) 26.6.1959. (iv) (a) 1 harrowing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 3 seeds/dibble. (v) Nil. (vi) Co_2—170. (vii) Irrigated. (viii) 7 interculturings and 3 weedings. (ix) 106.5″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=60$ lb./ac.
(2) 2 levels of K_2O as Mur. of Pot. : $K_0=0$ and $K_1=120$ lb./ac.
(3) 2 spacings between rows : $S_1=3'$ and $S_2=4'$.
(4) 2 levels of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

Sub-plot treatments

4 levels of N as A/S : $N_0=0$, $N_1=30$, $N_2=60$ and $N_3=90$ lb./ac.

P_2O_5 and K_2O applied on 14.9.1959 and 6.10.1959, F.Y.M. on 19.6.1959 and N on 14.9.1959, 6.10.1959 and 2.12.1959. Spacing between plants is 2′.

3. DESIGN :

Same as in expt. no. 59(76) on page 298.

4. GENERAL :

(i) Satisfactory. (ii) Attack of jassids, thrips, aphids and boll-worm. Endrine sprayed on 3.1.1960 and 10.1.1960. (iii) *Kapas* yield. (iv) (a) 1958—contd. (modified in 1959). (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 618 lb./ac. (ii) (a) 135.1 lb./ac. (b) 96.8 lb./ac. (iii) Main effect of N is highly significant. Main effects of P and F and interactions P×K and N×P are significant. (iv) Mean and differential responses in lb./ac.

Differential response

Mean response		P		K		S		F	
		−	+	−	+	−	+	−	+
P	125.5	—	—	73	178	93	158	162	89
K	−1.0	−53	52	—	—	−20	18	+4	−6
S	−42.5	−75	−10	−62	−24	—	—	−30	−55
F	88.5	+125	52	94	84	101	76	—	—

S.E. of mean response =23.88 lb./ac.
S.E. of differential response =33.78 lb./ac.

	P_0	P_1	K_0	K_1		S_2	F_0	F_1	Mean
N_0	427	452	438	441	454	425	401	478	440
N_1	556	641	610	588	608	590	575	622	599
N_2	577	736	666	647	683	631	595	718	657
N_3	659	891	758	792	810	740	722	828	775
Mean	555	680	618	617	639	596	573	662	618

S.E. of difference of two

(1)	P, K, S or F marginal means	=23.88 lb./ac.
(2)	N marginal means	=24.20 lb./ac.
(3)	N means at the same level of P, K, S or F	=34.22 lb./ac.
(4)	P, K, S or F means at the same level of N	=38.06 lb./ac.

Crop :- Cotton. **Ref :- Gj. 54(70).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find out the response of Cotton to different manurial doses and spacings.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 25.6.1954. (iv) (a) 2 harrowings. (b) and (c) N.A. (d) As per treatments. (e) 1 plant/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) Co_2—170 (early). (viii) Three weedings, 2 thinnings and 4 interculturings. (ix) 81.54". (x) 20.2.1955 6.3.1955 and 23.3.1955.

2. TREATMENTS :

Main-plot treatments :

N_0=Control.
N_1=20 lb./ac. of N as A/S top dressed 6 to 7 weeks after sowing.
N_2=20 lb./ac. of N as A/S top dressed 3 to 4 weeks after sowing.
N_3=40 lb./ac. of N as A/S split into two doses 3 to 4 weeks and 6 to 7 weeks after sowing.
N_4=40 lb./ac. of N as A/S 3 to 4 weeks after sowing.

Sub-plot treatments :

2 spacings between plants : $S_1=2'$ and $S_2=3'$.
Spacing between rows is 5'.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 42'×20'. (b) 36'×10'. (v) One row on either side and 1 plant at either end of each row. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 606.1 lb./ac. (ii) (a) 137.9 lb./ac. (b) 72.72 lb./ac. (iii) Main effect of N alone is highly significant (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	N_3	N_4	Mean
S_1	458.2	574.0	626.9	764.6	673.8	619.5
S_2	383.4	501.4	655.7	735.1	688.2	592.7
Mean	420.8	537.7	641.3	749.8	681.0	606.1

S.E. of difference of two

1. N marginal means =68.96 lb./ac.
2. S marginal means =22.99 lb./ac.
3. S means at the same level of N =51.42 lb./ac.
4. N means at the same level of S =77.95 lb./ac.

Crop :- Cotton. **Ref :- Gj. 55(52).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find out the response of Cotton to different manurial doses and spacings.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 27.6.1955. (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 5 C.L./ac. of F.Y.M. just before harrowing. (vi) Co_2—170 (early). (vii) Unirrigated. (viii) 3 weedings, 2 thinnings and 4 interculturings. (ix) 26.98″. (x) 3 pickings on 16.2.1956, 5.3.1956 and 31.3.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54 (70) on page 306.

4. GENERAL :

(i) Good. (ii) Attack of black-arm disease. (iii) *Kapas* yield. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 644.4 lb./ac. (ii) (a) 133.3 lb./ac. (b) 75.97 lb./ac. (iii) Main effect of N is significant. Effect of S is highly significant. Interaction N×S is not significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	N_3	N_4	Mean
S_1	503.7	698.1	683.2	795.4	792.8	694.6
S_2	500.4	591.1	526.4	680.0	673.5	594.3
Mean	502.0	644.6	604.8	737.7	733.1	644.4

S.E. of difference of two

1. N marginal means =66.67 lb./ac.
2. S marginal means =24.01 lb./ac.
3. S means at the same level of N =53.72 lb./ac.
4. N means at the same level of S =76.75 lb. ac.

Crop :- Cotton. **Ref :- Gj. 56(60).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find out the response of Cotton to different manurial doses and spacings.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Surat. (iii) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) Co_2—170 (early). (vii) Unirrigated. (viii) 3 weedings, 2 thinnings and 4 interculturings. (ix) 41.80″. (x) 3 pickings on 15.2.1957, 7.3.1957. and 19.3.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(70) on page 306.

4. GENERAL :

(i) Normal. (ii) Heavy attack of black-arm disease. (iii) *Kapas* yield. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 511.0 lb./ac. (ii) (a) 40.73 lb./ac. (b) 58.47 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	N_3	N_4	Mean
S_1	322.2	561.4	494.6	687.8	637.8	540.7
S_2	269.0	522.5	398.7	615.8	600.3	481.2
Mean	295.6	541.9	446.6	651.8	619.0	511.0

S.E. of difference of two

1. N marginal means =20.36 lb./ac.
2. S marginal means =18.48 lb./ac.
3. S means at the same level of N =41.35 lb./ac.
4. N means at the same level of S =35.63 lb./ac.

Crop :- Cotton. **Ref :- Gj. 57(110).**
Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To study the effect of inorganic and organic manures along with spacing and no. of plants per hill on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 6.7.1957, redibbled on 18.7.1957. (iv) (a) N.A. (b) Dibbling. (c) 3 to 4 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Cotton—2087. (vii) Unirrigated. (viii) 4 interculturings and 2 weedings. (ix) 33.41". (x) 28.3.1958 to 10.4.1958.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2), (3), (4) and (5)

(1) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=30$ lb./ac.
(2) 2 levels of K_2O as Pot. sul. : $K_0=0$ and $K_1=60$ lb./ac.
(3) 2 spacings : $S_1=5'\times2'$ and $S_2=5'\times3'$.
(4) No. of plants/dibble : $D_1=1$ and $D_2=2$ plants.
(5) 2 levels of F.Y.M. : $F_0=0$ and $F_1=5$ C.L./ac.

Sub-plot treatments :

3 levels of N as A/S : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

3. DESIGN :

(i) $2^5\times3$ split-plot. (ii) (a) 8 main-plots/block ; 4 blocks/replication and 3 sub-plots/main-plot. (b) N.A. (iii) (iv) (a) $25'\times30'$. (b) $15'\times24'$. (v) $5'\times3'$. (vi) Yes.

4. GENERAL :

(i) Poor due to heavy rains. (ii) Pink boll-worm attack. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Drying of bolls before maturity was about 12%. (vii) Nil.

5. RESULTS :

(i) 211 lb./ac. (ii) (a) 77.68 lb./ac. (b) 48.57 lb./ac. (iii) Main effect of N and interaction N×D are highly significant. Interactions P×D and K×F are significant. No other effect is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	P		K		S		D		F	
		−	+	−	+	−	+	−	+	−	+
P	3.78	—	—	3.02	4.54	18.80	−11.24	40.38	−32.82	10.33	−2.77
K	−2.52	−3.28	−1.76	—	—	−8.72	3.68	8.82	−13.86	−40.58	35.54
S	27.37	42.39	12.35	21.17	33.57	—	—	32.81	21.93	−1.47	56.21
D	−4.39	32.21	−40.99	6.95	−15.73	1.05	−9.83	—	—	−3.38	−5.40
F	1.86	8.41	−4.69	−36.20	39.92	−26.98	30.70	2.87	0.85	—	—

S.E. of mean response =15.86 lb./ac.
S E. of differential response =22.42 lb./ac.

	P_0	P_1	K_0	K_1	S_1	S_2	D_1	D_2	F_0	F_1	Mean
N_0	190	199	196	193	190	199	193	196	192	196	194
N_1	214	209	205	217	196	226	201	222	216	207	212
N_2	224	231	236	219	206	249	246	209	222	233	227
Mean	209	213	212	210	197	225	213	209	210	212	211

S.E. of difference of two

1. N marginal means =12.14 lb./ac.
2. N means at the same level of P, K, S, D or F =17.17 lb./ac.
3, P, K, S, D or F means at the same level of N =21.16 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(82).**
Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To study the effect of inorganic and organic manures along with spacing and no. of plants per hill on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 24 and 25.6.1958. (iv) (a) N.A. (b) Dibbling. (c) 3 to 4 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Cotton—2087. (vii) Unirrigated. (viii) 6 interculturings and 3 weedings. (ix) 44.81″. (x) 6.4.1959 and 9.4.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(110) on page 308.

4. GENERAL :

(i) Poor due to heavy rains. (ii) Boll-worm attack. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 347 lb./ac. (ii) (a) 109.7 lb./ac. (b) 75.64 lb./ac. (iii) Interactions P×S and S×F are significant. No other effect is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	P		K		S		D		F	
		−	+	−	+	−	+	−	+	−	+
P	22.69	—	—	45.38	0.00	81.00	−35.62	63.67	−18.29	37.50	7.88
K	−3.47	19.22	−26.16	—	—	−28.69	21.75	32.78	−39.72	−12.30	5.36
S	−27.11	31.20	−85.42	−52.33	−1.89	—	—	20.17	−74.39	−81.64	27.42
D	14.18	55.16	−26.80	50.43	−22.07	61.46	−33.10	—	—	−27.43	55 79
F	−7.56	7.25	−22.37	−16.39	1.27	−62.09	46.97	−49.17	34.05	—	—

S.E. of mean response =22.38 lb./ac.
S.E. of differential response =31.65 lb./ac.

	P_0	P_1	K_0	K_1	S_1	S_2	D_1	D_2	F_0	F_1	Mean
N_0	334	337	326	345	335	336	311	360	335	336	335
N_1	339	389	374	355	374	355	356	373	368	361	364
N_2	334	349	347	336	373	310	353	330	350	333	342
Mean	336	358	349	345	361	334	340	354	351	343	347

S.E. of difference of two

1. N marginal means =18.91 lb./ac.
2. N means at the same level of P, K, S, D or F =26.74 lb./ac.
3. P, K, S, D or F means at the same level of N =31.27 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(74).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To study the effect of inorganic and organic manures along with spacing and no. of plants per hill on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar* (*Kharif*) and *Tur* (*Rabi*). (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 30.6.1959 ; redibbled on 9.7.1959. (iv) (a) N.A. (b) Dibbling. (c) 3 to 4 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) 2087 (*Vijalpa*). (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) 70.77". (x) 10.4.1960.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(110) on page 308.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Flood waters from river Tapti entered the exptl. area and hence much damage was done to crop. (vii) Nil.

5. RESULTS :

(i) 366 lb./ac. (ii) (a) 82.04 lb./ac. (b) 86.52 lb /ac. (iii) Main effect of N is highly significant. Interaction K×D is significant. No other effect is significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	P		K		S		D		F	
		–	+	–	+	–	+	–	+	–	+
P	–24.45	—	—	4.24	–53.14	7.06	–55.96	–20.72	–28.18	–32.37	–16.53
K	16.54	45.23	–12.15	—	—	1.52	31.36	62.97	–29.89	12.71	20.37
S	9.98	41.49	–21.53	–5.04	25.00	—	—	–1.77	21.73	21.68	–1.72
D	–2.97	0.76	–6.70	43.46	–49.48	–14.72	8.78	—	—	–4.13	–1.81
F	–20.97	–28.89	–13.05	–24.80	–17.14	–9.27	–32.67	–22.13	–19.81	—	—

S.E. of mean response =16.75 lb./ac. S.E. of differential response =23.69 lb./ac.

	P_0	P_1	K_0	K_1	S_1	S_2	D_1	D_2	F_0	F_1	Mean
N_0	332	252	289	295	294	290	290	294	312	272	292
N_1	378	370	377	370	365	382	378	369	377	370	373
N_2	424	438	406	456	422	440	434	429	440	423	432
Mean	378	353	357	374	360	371	367	364	376	355	366

S.E. of difference of two

1. N marginal means =21.63 lb./ac.
2. N means at the same level of P, K, S, D or F =30.59 lb./ac.
3. P, K, S, D or F means at the same level of N =30.07 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(94).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To ascertain the optimum spacing and combination of different fertilizers for Cotton.

1 BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 16.7.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) CJ—73. (vii) Unirrigated. (viii) 2 weedings, 1 interculturing and 1 thinning. (ix) N.A. (x) 27.11.1958, 24.12.1958 and 22.1.1959.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : $S_1=18''$, $S_2=27''$ and $S_3=36''$.

Sub-plot treatments :

2 spacings between plants after thinning : $R_1=6''$ and $R_2=9''$.

Sub-sub-plot treatments :

$M_0=0$, $M_1=20$ lb./ac. of N+10 lb./ac. of P_2O_5 and $M_2=40$ lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S and P_2O_5 as Super applied in furrows at sowing.

3. DESIGN :

(i) Split-split-plot. (ii) (a) 3 main-plots/replication, 2 sub-plots/main-plot; 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 24'×30' for S_1 and S_3, 22.5'×30' for S_2. (b) 18'×24'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 884 lb./ac. (ii) (a) 141.9 lb./ac. (b) 78.15 lb./ac. (c) 79.12 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	840	915	895	884	855	888	908
R_2	871	908	874	884	868	878	907
Mean	856	912	884	884	862	884	907
M_0	793	916	876				
M_1	870	908	871				
M_2	905	909	907				

S.E. of difference of two

1. S marginal means =47.29 lb./ac.
2. R marginal means =21.27 lb./ac.
3. M marginal means =26.37 lb./ac.
4. M means at the same level of R =37.29 lb./ac.
5. M means at the same level of S =45.68 lb./ac.
6. R means at the same level of M =37.14 lb./ac.
7. S means at the same level of M =60.23 lb./ac.
8. R means at the same level of S =36.84 lb./ac.
9. S means at the same level of R =53.99 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(104).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To ascertain the optimum spacing and combination of different fertilizers for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 8.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 15 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) CJ—73. (vii) Unirrigated. (viii) N.A. (ix) 25.98″. (x) 10.12.1959.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : $S_1=18''$, $S_2=36''$, $S_3=54''$.

Sub-plot treatments :

2 spacings between plants : $R_1=6''$ and $R_2=9''$.

Sub-sub-plot treatments :

$M_0=0$, $M_1=20$ lb./ac. of N+10 lb./ac. of P_2O_5, $M_2=40$ lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S and P_2O_5 as Super applied in furrows at sowing.

3. DESIGN :

(i) Split-split-plot. (ii) (a) 3 main-plots/replication, 2 sub-plots/main-plot; 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 24′×30′. (b) 18′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 393 lb./ac. (ii) (a) 203.4 lb./ac. (b) 69.49 lb./ac. (c) 120.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	S_1	S_2	S_3	Mean	M_0	M_1	M_2
R_1	473	434	334	414	411	392	439
R_2	384	380	348	371	292	416	406
Mean	429	408	341	393	352	404	422
M_0	424	398	232				
M_1	408	417	387				
M_2	455	408	404				

S.E. of difference of two

1. S marginal means =67.80 lb./ac.
2. R marginal means =18.91 lb./ac.
3. M marginal means =40.00 lb./ac.
4. M means at the same level of R=56.57 lb./ac.
5. M means at the same level of S=69.28 lb./ac.
6. R means at the same level of M =49.90 lb./ac.
7. S means at the same level of M =88.29 lb./ac.
8. R means at the same level of S =32.76 lb./ac.
9. S means at the same level of R =71.64 lb./ac.

Crop :- Cotton. **Ref :- Gj. 54(75).**

Site :- Agri. Res. Stn., Viramgam. **Type :- 'CM'.**

Object :—To determine the optimum spacing and manurial requirements of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Alluvial. (b) Refer soil analysis, Viramgam. (iii) 8 and 9th July 1954. (iv) (a) 1 harrowing. (b) Drilling. (c) 15 lb./ac. (d) As per treatments. (e) N.A. (v) 5 C.L/ac. of F.Y.M. evenly distributed in the middle of June. (vi) *Kalyan*-improved (late). (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) 27.23″. (x) 21.2.1955.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=20$ lb./ac.

(2) 2 levels of F.Y.M. as Super : $F_0=0$ and $F_1=5$ C.L./ac.

(3) 4 levels of N as A/S : $N_0=0$, $N_1=10$ and $N_2=20$ lb./ac. in two equal doses and $N_3=20$ lb./ac. in a single dose.

Sub-plot treatments :

3 spacings between rows : $S_1=18''$, $S_2=24''$ and $S_3=30''$.

F.Y.M. was applied on 18.6.1954, Super on 22.6.1954 and A/S on 9.9.1954 and 10.10.1954.

3. DESIGN :

(i) Split-plot. (ii) (a) 16 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 40′×15′, 40′×16′ and 40′×15′ for S_1, S_2 and S_3 respectively. (b) 30′×12′, 30′×12′ and 36′×10′ for S_1, S_2 and S_3 respectively. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Extremely good. (ii) Slight attack of leaf-spot and jassids. (iii) N.A. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1565 lb./ac. (ii) (a) 381.5 lb./ac. (b) 181.5 lb./ac. (iii) Main effect of S is highly significant. Interaction P×F is significant. Other effects are not significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	N_3	F_0	F_1	S_1	S_2	S_3	Mean
P_0	1589	1545	1573	1527	1516	1600	1599	1632	1444	1558
P_1	1612	1479	1560	1639	1637	1507	1601	1630	1486	1572
Mean	1601	1512	1566	1583	1577	1554	1600	1631	1465	1565
S_1	1634	1518	1637	1612	1609	1591				
S_2	1639	1615	1566	1703	1672	1590				
S_3	1528	1402	1496	1433	1449	1480				
F_0	1624	1517	1576	1590						
F_1	1577	1506	1557	1576						

S.E. of difference of two

1. P or F marginal means =63.58 lb./ac.
2. N marginal means =89.92 lb./ac.
3. S marginal means =37.05 lb./ac.
4. S means at the same level of P or F=52.40 lb./ac.
5. S means at the same leval of N =74.10 lb./ac.
6. P or F means at the the level of S=76.65 lb./ac.
7. N means at the same level of S =108.4 lb./ac.

S.E. of body of P×F table =63.58 lb./ac.

S.E. of body of P×N or F×N table =89.92 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 55(62).**

Site :- Agri. Res. Stn., Viramgam. **Type :- 'CM'.**

Object :—To determine the optimum spacing and manurial requirements of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) (a) Alluvial (medium black). (b) Refer soil analysis, Viramgam. (iii) 5.7.1955. (iv) (a) 4 harrowings. (b) Drilling. (c) 12 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Kalyan* (early). (vii) Unirrigated. (viii) Gap filling, 2 interculturings and 2 weedings. (ix) 20.18″. (x) 6 3.1956 and 22.3.1956.

2. TREATMENTS :

Same as in expt. no. 54(75) on page 312.
F.Y.M. broadcast on 20.6.1955, P_2O_5 drilled on 20.6.1955 and N sprinkled on 16.8, 30.8 and 15.10.1955.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 46′×40′ (main), 15′×40′ (S_1 and S_2), 16′×40′ (S_3) (sub). (b) 34′×36′, (main) 12′×30′ (S_1 and S_2), 10′×36′ (S_3) (sub). (v) 1 guard row on either side of each sub-plot. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Angular leaf-spots. Damage is negligible. No control measures taken. (iii) *Kapas* yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1252 lb./ac. (ii) (a) 250.8 lb./ac. (b) 169.7 lb./ac. (iii) Only main effect of P is significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	N_3	F_0	F_1	S_1	S_2	S_3	Mean
P_0	1322	1284	1304	1294	1271	1331	1295	1256	1352	1301
P_1	1230	1233	1161	1185	1185	1220	1211	1205	1192	1203
Mean	1276	1259	1232	1239	1228	1275	1253	1231	1272	1252
S_1	1318	1303	1179	1212	1242	1264				
S_2	1231	1236	1210	1246	1186	1275				
S_3	1281	1238	1308	1261	1256	1287				
F_0	1199	1209	1296	1207						
F_1	1353	1308	1168	1271						

S.E of difference of two
1. P or F marginal means =41.80 lb./ac.
2. N marginal means =59.11 lb./ac.
3. S marginal means =34.64 lb./ac.
4. S means at a level of P or F =48.99 lb./ac.
5. S means at a level of N =69.28 lb./ac.
6. P or F means at a level of S =57.86 lb./ac.
7. N means at a level of S =81.82 lb./ac.
S.E. of body of P×F table =41.80 lb./ac.
S.E. of body of P×N or F×N table =59.11 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(98).**

Site :- Agri. Res. Stn., Viramgam. **Type :- 'CM'.**

Object :—To determine the optimum spacing and manurial requirements of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Alluvial (medium black). (b) Refer soil analysis, Viramgam. (iii) 2.7.1957. (iv) (a) 4 harrowings. (b) Drilling. (c) 12 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Kalyan* (early). (vii) Unirrigated. (viii) 3 interculturings. (ix) 13.01″. (x) 13.3.1958.

2. TREATMENTS :

Same as in expt. no. 54(75) on page 312.

3. DESIGN :

Same as in expt. no. 55(62) on page 313.

4. GENERAL :

(i) Poor due to weeds. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 504 lb./ac. (ii) (a) 171.4 lb./ac. (b) 99.71 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	N_3	F_0	F_1	S_1	S_2	S_3	Mean
P_0	512	486	485	551	488	529	550	538	437	508
P_1	528	487	510	484	496	508	541	510	456	502
Mean	520	486	497	517	492	518	546	524	447	504
S_1	597	515	519	533	516	576				
S_2	530	485	518	564	528	520				
S_3	435	459	455	438	433	460				
F_0	509	476	477	507						
F_1	531	496	518	528						

S.E. of difference of two

1. P or F marginal means =28.57 lb./ac.
2. N marginal means =40.40 lb./ac.
3. S marginal means =20.35 lb./ac.
4. S means at a level of P or F =28.78 lb./ac.
5. S means at a level of N =40.71 lb./ac.
6. P or F means at a level of S =36.98 lb./ac.
7. N means at a level of S =52.29 lb./ac.

S.E. of body of P×F table =28.57 lb./ac.

S.E. of body of P×N or F×N table =40.40 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 59(55).**

Site :- Trial-cum-Demonstration Farm, Bardoli. **Type :- 'I'.**

Object :—To find out the optimum dose of irrigation required for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*, Paddy and *Wal*. (c) 300 lb./ac. of G.N.C.+100 lb./ac. of A/S+100 lb./ac. of Super. (ii) (a) Deep black soil. (b) Refer soil analysis, Bardoli. (iii) 23.6.1959. (iv) (a) Four harrowings and 1 ploughing. (b) Dibbling. (c) N.A. (d) 6′×2′. (e) 2 to 3. (v) 10 C.L./ac. of F.Y.M. applied in furrows on 26.6.1959. (vi) Cotton—2087. (vii) As per treatments. (viii) Four interculturings and 2 weedings. (ix) 100″. (x) 10.3.1960·

2. TREATMENTS :

1. Control (no irrigation).
2. Irrigation every two weeks.
3. Irrigation every three weeks.
4. Irrigation every four weeks.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 54′×40′. (b) 42′×26′. (v) 6′×7′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 640 lb./ac. (ii) 197.7 bl./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4
Av. yield	571	708	622	658

S.E./mean =88.4 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 54(47).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To find out suitable number of irrigations for maximum yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 18.7.1954. (iv) (a) Two harrowings and two interculturings and weedings etc. (b) Drilling. (c) 10 lb./ac. (d) 3′ distance between rows. (e) N.A. (v) Nil. (vi) Co_2—170 (medium). (vii) As per treatments. (viii) Four interculturings and 1 weeding. (ix) 20″. (x) Two pickings on 2.1.1955 and 18.2.1955.

2. TREATMENTS :

4 levels of irrigations : $I_0=0$, $I_1=1$, $I_2=2$ and $I_3=3$ irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 66′×24′. (b) 60′×18′. (v) One row along length and 3′ along breadth. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of red leaf disease, Jasides and aphids at boll formation stage. (iii) Height of plant, total no. of bolls/plant and *kapas* yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 404.8 lb./ac. (ii) 41.54 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	I_0	I_1	I_2	I_3
Av. yield	422.2	420.4	395.3	381.4

S.E./mean =16.94 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 55(36).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To find out the economical number of irrigations for Cotton.

1. BASAL CONDITIONS :

(i) (i) Nil. (b) *Sann*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 23.7.1955. (iv) (a) 1 ploughing and 3 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′×9″ to 12″. (e) N.A. (v) Super broadcast and castorcake top dressed ; amount N.A. (vi) Co_2—170. (vii) As per treatments. (viii) 6. interculturings. (ix) 13.75″. (x) 15.3.1956 and 30.3.1956.

2. TREATMENTS :

3 levels of irrigation : $I_0=0$, $I_1=1$ and $I_2=2$ irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) 1954 (modified in 1955)—N.A. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 529 lb./ac. (ii) 126.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	I_0	I_1	I_2
Av. yield	540	526	522

S.E./mean =51.6 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 57(15).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To assess the best interval and number of irrigations for Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 12.7.1959, (iv) (a) One ploughing. (b) Drilling. (c) 10 lb./ac. (d) N.A. (e) —. (v) Nil. (vi) Co_2—170. (vii) As per treatments. (viii) Three interculturings and 4 weedings. (ix) About 34". (x) 11.2.1960.

2. TREATMENTS :

1. Control (no irrigation).
2. Irrigation at 14 days interval.
3. 5 irrigations at 21 days interval.
4. 3 irrigations at 28 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 50'×18'. (b) 44'×12'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Light attack of grass hoppers, flies, aphids and Jassids and spraying of Endrine. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (vi) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 332 lb./ac. (ii) 48.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4
Av. yield	331	317	369	311

S.E./mean =19.7 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 58(28).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To assess the best interval and number of irrigations for Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Wheat. (c) 200 lb./ac. of Super+200 lb./ac. of A/S+200 lb /ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 16.7.1958. (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 5 lb./ac. (d) 3' between rows. (e) —. (v) Nil. (vi) Co_2—170. (vii) As per treatments. (viii) 4 interculturings and 2 weedings. (ix) About 13". (x) 31.1.1959.

2. TREATMENTS :

Same as in expt. no. 57(15) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 51'×18'. (b) 45'×12'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of black-arm and shoot-borer. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 711 lb./ac. (ii) 87.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4
Av. yield	571	771	734	769

S.E./mean =35.8 lb./ac.

Crop :- Cotton. **Ref :- Gj. 59(72).**

Site :- Trial-cum-Demonstration Farm, Kholwad. **Type :- 'I'.**

Object :—To find out the optimum time and no. of irrigations for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*, spices and wheat. (c) *Jowar* and wheat received 40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) N.A. (iii) 26.6.1959. (iv) (a) 1 harrowing. (b) Dibbling. (c) 3 seeds/dibble. (d) 6′×2′. (e) —. (v) 5 C.L./ac. of F.Y.M. on 20.6.1959 and 40 lb./ac. of N as A/S on 7.10.1959 and 30.11.1959. (vi) Cotton—2087. (vii) As per treatments. (viii) 6 interculturings and 4 weedings. (ix) 106.6″. (x) N.A.

2. TREATMENTS :

1. Control (no irrigation).
2. Irrigation every two weeks (5 irrigations).
3. Irrigation every three weeks (4 irrigations).
4. Irrigation every four weeks (3 irrigations).

Intensity of irrigation is 2.5 acre inches in each case.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 54′×40′. (b) 42′×26′. (v) 6′×7′. (vi) Yes.

4. GENERAL :

(i) Heavy rain adversely affected the crop. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1959—contd. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) The results of the expt. are not satisfactory as the crop was affected by heavy rain and Tapti flood water. (vii) Nil.

5. RESULTS :

(i) 557 lb./ac. (ii) 68.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4
Av. yield	469	609	536	612

S.E./mean =30.5 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 56(92).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'I'.**

Object :- To study the effect of irrigation on Cotton.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 8.7.1956. (iv) (a) Nil. (b) Drilling. (c) 15 lb./ac. (d) 3′ between rows. (e)—. (v) 20 lb./ac. of N as manure mixture at sowing. (vi) *Pratap* cotton. (vii) As per treatments. (viii) and (ix) N.A. (x) 7.12.1956 and 24.1.1957.

2. TREATMENTS :

3 levels of irrigation : I_0=0, I_1=1 and I_2=2 irrigations.

3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 48′×24′. (b) 42′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 335 lb./ac. (ii) 61.9 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of *kapas* in lb./ac.

Treatment	I_0	I_1	I_2
Av. yield	308	335	363

S.E./mean =25.3 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(75).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'I'.**

Object :—To study the effect of irrigation on yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 28.6.1957. (iv) (a) 1 tractor ploughing and 2 harrowings. (b) to (e) N.A. (v) 20 lb./ac. of N as A/S. (vi) *Pratap* (medium). (vii) As per treatments. (viii) 2 weedings and 2 interculturings. (ix) 34″. (x) 18.12.1957.

2 TREATMENTS :

Same as in expt. no. 56(92) on page 318.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 48′×24′. (b) 42′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Boll worm attack. (iii) *Kapas* yield. (iv) (a) 1956–1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 720 lb./ac. (ii) 65.97 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	I_0	I_1	I_2
Av. yield	644	740	775

S.E./mean =26.93 bl./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(102).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'IV'.**

Object :—To study the effect of irrigation on different varieties of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 13.7.1958. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 5 lb./ac. (d) 3′×2′ (e) 3 to 4 seeds/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) and (vii) As per treatments. (viii) 2 interculturings. (ix) 33.27″. (x) 1.2.1959 and 20.4.1959.

2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : $I_0=0$, $I_1=2$, $I_2=4$ and $I_3=6$ irrigations.

Sub-plot treatments :

3 varieties : V_1=Co$_2$—170, V_2=*Kalyan* and V_3=CJ—73.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) 72′×54′. (iii) 4. (iv) (a) 18′×18′. (b) 14′×12′. (v) 2′×3′. (vi) Yes.

4 GENERAL

(i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1310 lb./ac. (ii) (a) 159.6 lb./ac. (b) 627.5 lb./ac. (iii) Main effects of I and V are highly significant. Interaction I×V is not significant. (iv) Av. yield of *kapas* in lb./ac.

	V_1	V_2	V_3	Mean
I_0	996	1791	640	1142
I_1	1173	2131	918	1407
I_2	1324	1921	857	1367
I_3	1162	1978	827	1322
Mean	1164	1955	810	1322

S.E. of difference of two

1. I marginal means = 65.2 lb./ac.
2. V marginal means =221.9 lb./ac.
3. V means at the same level of I =443.7 lb./ac.
4. I means at the same level of V =368.1 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 59(98).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'IV'.**

Object :—To study the effect of irrigation on different varieties of Cotton.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 4.7.1959. (iv) (a) One ploughing and two harrowings. (b) Dibbling. (c) —. (d) 3'×2'. (e) 3 to 4 seed/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) and (vii) As per treatments. (viii) Nil. (ix) 57.54". (x) 20.5.1960.

2. TREATMENTS:

Same as in expt. no. 58(102) on page 319.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) 72'×54'. (iii) 4. (iv) (a) 18'×18'. (b) 14'×12'. (v) 2'×3'. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 263 lb./ac. (ii) (a) 67.5 lb./ac. (b) 34.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *Kapas* in lb./ac.

	V_1	V_2	V_3	Mean
I_0	264	259	251	258
I_1	292	259	247	266
I_2	255	255	267	259
I_3	288	284	240	270
Mean	275	264	251	

S.E. of difference of two

1. I marginal means =27.6 lb./ac.
2. V marginal means =12.0 lb./ac.
3. V means at the same level of I =17.0 lb.lac.
4. I means at the same level of V =33.8 lb./ac.

Crop :- Cotton. **Ref :- Gj. 58(108).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'ICM'.**

Object :—To study the effect of irrigation, time of sowing spacing and Nitrogen on Cotton.

1 BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowing. (b) Dibbling. (c) 5 lb./ac. (d) 3′ between rows. (e) 3-4 seeds/dibble ; thinned to one plant/hill. (v) 5 C.L./ac. of F.Y.M. (vi) Co_2—170. (vii) As per treatments. (viii) Two interculturings. (ix) N.A. (x) 22.2.1959 and 11.4.1959.

2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : $I_1=2$, $I_2=3$ and $I_3=4$ irrigations.

Sub-plot treaments :

3 dates of sowing : D_1=27.5.1958, D_2=15.6.1958 and D_3=3.7.1958.

Sub-sub-plot treatments :

3 spacings : $S_1=9''$, $S_2=18''$ and $S_3=27''$.

Sub-sub-sub-plot treatments :

3 levels of N : $N_1=0$, $N_2=20$ and $N_3=40$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot ; 3 sub-sub-plots/sub-plot ; 3 sub-sub-sub-plots/sub-sub-plot. (b) N.A. (iii) 2. (iv) (a) 27′×18′. (b) 22.5′×12′. (v) 2.25′×3′. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 816 lb./ac. (ii) (a) 219.2 lb./ac. (b) 338.8 lb./ac. (c) 157.6 lb./ac. (d) 145.3 lb./ac. (iii) Only I, D and S effects are significant. Other effects are not significant. (iv) Av. yield of *kapas* in lb /ac.

	D_1	D_2	D_3	S_1	S_2	S_3	N_1	N_2	N_3	Mean
I_1	951	862	597	872	793	746	838	798	775	804
I_2	1101	892	569	1028	831	703	849	836	876	854
I_3	1007	792	575	931	766	677	840	755	779	791
Mean	1020	849	580	944	797	709	842	796	810	816
N_1	1094	858	575	950	802	775				
N_2	984	854	552	923	804	663				
N_3	982	835	614	958	785	687				
S_1	1169	990	673							
S_2	999	807	584							
S_3	892	749	484							

S.E. of difference of two

1. I marginal means = 42.18 lb./ac.
2. D marginal means = 65.20 lb./ac.
3. S marginal means = 30.33 lb./ac.
4. N marginal means = 27.96 lb./ac.
5. N means at the same level of I = 48.43 lb./ac.
6. I means at the same level of N = 57.82 lb./ac.
7. N means at the same level of D = 48.43 lb./ac.
8. D means at the same level of N = 76.26 lb./ac.
9. N means at the same level of S = 48.43 lb./ac.
10. S means at the same level of N= 49.84 lb./ac.
11. S means at the same level of I = 52.53 lb./ac.
12. S means at the same level of S = 60.16 lb./ac.
13. S means at the same level of D = 52.53 lb./ac.
14. D means at the same level of S = 78.05 lb./ac.
15. D means at the same level of I =112.93 lb./ac.
16. I means at the same level of D=101.40 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(119).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'ICM'.**

Object :—To study the effect of irrigation, time of sowing, spacing and Nitrogen on Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 5 lb./ac. (d) As per treatments. (e) 3-4 seeds/dibble ; thinned to one plant/hill. (v) 5 C.L./ac. of F.Y.M. (vi) Co_2—170. (vii) As per treatments. (viii) 2 interculturings. (ix) N.A. (x) 26.4.1960,

2. TREATMENTS :

Main-plot treatments :
Same as in expt. no. 58(108) on page 321.

Sub-plot treatments :
3 dates of sowing : D_1=27.5.1959, D_2=15.6.1959 and D_3=3.7.1959.

Sub-sub-plot and sub-sub-sub plot treatments :
Same as in expt. no. (58)108 on page 321.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot ; 3 sub-sub-plots/sub-plot ; 3 sub-sub-sub-plots/sub-sub-plot. (b) 271′×162′. (iii) 2. (iv) (a) 27′×18′. (b) 22½′×12′. (v) 2.25′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 952 lb./ac. (ii) (a) 283.6 lb./ac. (b) 273.6 lb./ac. (c) 194.2 lb./ac. (d) 137.1 lb./ac. (iii) D and S effects are highly significant. Other effects are not significant. (iv) Av. yield of *kapas* in lb./ac.

	D_1	D_2	D_3	S_1	S_2	S_3	N_1	N_2	N_3	Mean
I_1	1296	850	588	1067	958	709	931	862	940	911
I_2	1134	1021	533	1054	893	741	920	953	815	896
I_3	1472	886	788	1186	1191	769	992	1040	1113	1049
Mean	1301	919	636	1102	1014	740	948	952	956	952
N_1	1339	924	580	1179	940	724				
N_2	1320	922	614	1096	977	783				
N_3	1243	911	714	1031	1124	713				
S_1	1469	1036	802							
S_2	1459	966	616							
S_3	974	756	490							

S.E. of difference of two

1. I marginal means =54.58 lb./ac.
2. D marginal means =52.65 lb./ac.
3. S marginal means =37.37 lb./ac.
4. N marginal means =26.38 lb./ac.
5. N means at the same level of I =45.70 lb./ac.
6. I means at the same level of N =66.11 lb./ac.
7. N means at the same level of D =45.70 lb./ac.
8. D means at the same level of N =64.54 lb./ac.
9. N means at the same level of S =45.70 lb./ac.
10. S means at the same level of N =52.81 lb./ac.
11. S means at the same level of I =62.73 lb./ac.
12. I means at the same level of S =75.98 lb./ac.
13. S means at the same level of D =62.73 lb./ac.
14. D means at the same level of S =74.61 lb./ac.
15. D means at the same level of I =91.20 lb./ac.
16. I means at the same level of D =92.32 lb./ac.

Crop :- Cotton. **Ref :- Gj. 56(61).**

Site :- Agri. Res. Stn., Surat. **Type :- 'D'.**

Object :—To study the effect of chemicals on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 28.6.1956 and filling the gaps on 9.7.1956 and 16.7.1956. (iv) (a) 2 harrowings. (b) N.A. (c) 101 lb./ac. (d) 3′×1′. (e) —. (v) Nil. (vi) Cotton—2087. (vii) Unirrigated. (viii) Thinning, weeding and 3 interculturings. (ix) 41.74″. (x) 14.3.1957 and 4.3.1957.

2. TREATMENTS :

Eight solutions for soaking seeds : S_0=No soaking, S_1=M_5 taric acid for 4 hours, S_2=M_5 taric acid for 6 hours, S_3=M_5 taric acid for 8 hours, S_4=.05% formaldehyde for 2 hours, S_5=.05% formaldehyde for 4 hours, S_6=.05% formaldehyde for 8 hours and S_7=Water for 4 hours.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 24′×10′. (b) 24′×10′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of boll-worm. (iii) *Kapas* yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 563.8 lb./ac. (ii) 110.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7
Av. yield	543.1	577.2	576.7	608.0	596.7	593.5	496.0	519.1

S.E./mean =55.4 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 57(71).**

Site :- Agri. Res. Stn., Surat. **Type :- 'D'.**

Object :—To study the effect of harmones on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 26.6.1957. (iv) (a) N.A. (b) Dibbling. (c) 4—5 lb./ac. (d) 5′×2′. (e) 5 to 6 seeds/dibble. (v) Nil. (vi) 2087 (*Vijalpa*). (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 33.41″. (x) 27.3.1958 and 4.4.1958.

2. TREATMENTS :

All combinations of (1), (2) and (3)+2 controls (no spraying)

(1) 2 sources of harmones : S_1=N.A.A. and S_2=P.A.A.
(2) 2 concentrations : C_1=10 and C_2=20 p.p.m.
(3) 3 intervals of spraying : D_1=55 days, D_2=76 days and D_3=55 and 76 days after sowing.

Harmones sprayed on 21.8.1957 and 13.9.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 32′×25′. (b) 20′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Pink boll-worm attack and drying of bolls before maturing. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Low yield due to drying of bolls before maturing. (vii) Nil.

5. RESULTS :

(i) 282 lb./ac. (ii) 100.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac

Control =286 lb./ac.

	D_1	D_2	D_3	Mean	C_1	C_2
S_1	274	286	275	278	271	286
S_2	272	299	279	283	297	270
Mean	273	293	277	281	284	278
C_1	268	298	285			
C_2	279	287	269			

S.E. of S or C marginal mean =20.6 lb./ac.
S.E. of D marginal mean =25.2 lb./ac.
S.E. of control mean or body of S×D or C×D table =35.7 lb./ac.
S.E. of body of S×C table =29.1 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(54).**
Site :- Agri. Res. Stn., Surat. **Type :- 'D'.**

Object :—To study the effect of harmones on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.6.1958. (iv) (a) Nil. (b) Dibbling. (c) 4-5 lb./ac. (d) 5′×2′. (e) 5-6 seeds/dibble. (v) 20 lb./ac. of N. as A/S on 8.9.1956. (vi) 2087 *(Vijalpa)*. (vii) Unirrigated. (viii) 4 interculturings, 4 weedings and 1 thinning. (ix) 44.81″. (x) 7.4.1959.

2. TREATMENTS :

Same as in expt. no. 57(71) on page 323.
Harmones sprayed on 6.9.1958 and 27.9.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 32′×25′. (b) 20′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Boll-worm attack up to 20%. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 463 lb./ac. (ii) 67.23 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

Control =436 lb./ac.

	D_1	D_2	D_3	Mean	C_1	C_2
S_1	454	476	481	470	466	475
S_2	467	499	426	464	478	450
Mean	461	487	453	467	472	463
C_1	485	462	467			
C_2	436	513	440			

S.E. of S or C marginal mean =13.70 lb./ac.
S.E. of D marginal mean =16.81 lb./ac.
S.E. of control mean or body of S×D or C×D table =23.77 lb./ac.
S.E. of body of S×C table =19·41 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(32).**
Site :- Agri. Res. Stn., Surat. **Type :- 'D'.**

Object :—To study the effect of harmones on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar—Tur*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 26.6.1959. (iv) (a) Nil. (b) Dibbling. (c) 5-6 lb./ac. (d) 5′×2′. (e) 5-6 seeds/ac. (v) Nil. (vi) 2087 (*Vijalpa*). (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) 70.77″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 57(71) on page 323.
Harmones sprayed on 20.8.1959 and 11.9.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 64′×72′. (iii) 4. (iv) (a) 32′×25′. (b) 20′×15′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 531 lb./ac. (ii) 54.60 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

Control =546 lb./ac.

	D_1	D_2	D_3	Mean	C_1	C_2
S_1	509	540	533	527	514	540
S_2	540	514	429	528	536	519
Mean	525	527	531	528	525	530
C_1	519	533	524			
C_2	530	521	538			

S.E. of S or C marginal mean =11.15 lb./ac.
S.E. of D marginal mean =13.65 lb./ac.
S.E. of control mean or body of S×D or C×D table =19.30 lb./ac.
S.E. of body of S×C table =15.76 lb./ac.

* * *

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 54(15).**
Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of boron and manganese on Groundnut crop.

1· BASAL GONDITIONS :

(i) (a) Cotton—*Jowar* or *Bajra*—Groundnut. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 6.7.1954. (iv) (a) N.A. (b) Drilling. (c) 50 lb./ac. (d) Between rows—18″ between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. in May 1954. (vi) A.H.—32 (medium). (vii) Unirrigated. (viii) 4 weedings and 3 interculturings. (ix) 26.72″. (x) 21.10.1954.

2. TREATMENTS:

All combinations of (1) and (2)
(1) 2 levels of Boron : $B_0=0$ and $B_1=4$ lb./ac.
(2) 2 levels of Manganese : $M_0=0$ and $M_1=6$ lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 45′×21′. (b) 40′×12′. (v) 2½′×4½′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Attack of *tikka* and aphids, Nicotine sulphate sprayed. (iii) Pod and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Dohad. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 791 lb./ac. (ii) 66.27 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	B_0	B_1	Mean
M_0	834	711	773
M_1	808	812	810
Mean	821	762	791

S.E. of any marginal mean =27.05 lb./ac.
S.E. of body of table =38.26 lb./ac.

Crop :- Groundnut ***(Kharif).*** **Ref :- Gj. 56(10).**
Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the N, P and K requirements of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Bajra* or *Jowar*—Groundnut. (b) *Bajra.* (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 8.7.1956. (iv) (a) N.A. (b) Drilling. (c) 50 lb./ac. (d) Between rows—18″ ; between plants—irregular. (e) —. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) A.H.—32 (medium). (vii) Unirrigated. (viii) 2 interculturings and 2 weedings. (ix) 26.96″. (x) 19.10.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)
1. 3 levels of N : N_0=0, N_1=10 and N_2=20 lb./ac.
2. 3 levels of P_2O_5 : P_0=0, P_1=50 and P_2=100 lb./ac.
3. 3 levels of K_2O : K_0=0, K_1=100 and K_2=200 lb./ac.

N applied as A/S, P_2O_5 as Super and K_2O as Potash. N and K_2O spread at sowing, N was given in two doses, one at planting and the other one month after sowing. Super was drilled in furrows at sowing.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 36′×21′. (b) 30′×15′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of *tikka* disease. (iii) Pod and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Dohad. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1845 lb./ac. (ii) 136.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	Mean	K_0	K_1	K_2
P_0	1813	1882	1882	1859	1869	1798	1910
P_1	1738	1847	1893	1826	1798	1799	1882
P_2	1826	1850	1877	1851	1820	1811	1921
Mean	1792	1860	1884	1845	1829	1803	1904
K_0	1700	1894	1892				
K_1	1756	1837	1815				
K_2	1920	1848	1946				

S.E. of any marginal mean =32.15 lb./ac.
S.E. of body of any table =35.69 lb./ac.

Crop :- Groundnut. **Ref :- Gj. 59(64).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object :—To study the effect of N, P and K with and without F.Y.M. on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 40 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 4.7.1959. (iv) (a) N.A. (b) Drilling. (c) 80 lb./ac. (d) 18″ between rows. (e) —. (v) Nil. (vi) A and F—32. (vii) Unirrigated. (viii) N.A. (ix) 45.56″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3).

(1) 3 levels of N as A/S : $N_0=0$, $N_1=10$ and $N_2=20$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=50$ and $P_2=100$ lb./ac.
(3) 3 levels of K_2O as Pot. sul. : $K_0=0$, $K_1=100$ and $K_2=200$ lb./ac.

Sub-plots treatments ·

2 levels of F.Y.M. : $F_0=0$ and $F_1=5$ C.L./ac.

3. DESIGN:

(i) $3^3 \times 2$ confd in split-plot. (ii) (a) 3 blocks/replication ; 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 36′×21′. (b) 30′×15′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Pod and top yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 940 lb./ac. (ii) (a) 141.8 lb./ac. (b) 122.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	914	930	885	893	917	922	925	925	890	910
F_1	1027	992	890	879	1019	1011	954	1003	952	970
Mean	971	961	888	885	968	967	934	964	921	1728
K_0	1008	976	819	944	899	960				
K_1	1008	960	924	847	1097	948				
K_2	895	948	920	863	907	992				
P_0	879	1033	742							
P_1	976	968	960							
P_2	1057	883	961							

S.E. of difference of two.

1. N, P or K marginal means =47.27 lb./ac.
2. F marginal means =33.32 lb./ac.
3. F means at the same level of N,P or K =57.70 lb./ac.
4. N, P or K means at the same level of F =62.44 lb./ac.

S.E. of body of N×P, N×K, or P×K table =47.27 lb./ac.

Crop :- Groundnut ***(Kharif).*** **Ref :- Gj. 59(91).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'M'.**

Object : —To find out the effect of different micronutrients on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 11.7.1959. (iv) (a) 4 harrowings. (b) Drilling. (c) 80 lb./ac. (d) 18″ between rows. (e)—. (v) 10 lb./ac. of N+20 lb./ac. of P_2O_5. (vi) A.H.—32. (vii) Unirrigated. (viii) 3 to 4 interculturings and 2 weedings. (ix) 45.56″. (ix) 20.10.1959.

2. TREATMENTS:

All combinations of the following micronutrients each at two levels *viz.* presence and absence.
(1) Zinc—Zn, (2) Manganese—Mn, (3) Copper—Cu, (4) Molybdenum—Mo and (5) Boron—B.

3. DESIGN:

(i) 2^5 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 30′×18′. (b) 24′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Excessive rain in October affected the yield. (vii) Nil.

5. RESULTS :

(i) 985.66 lb./ac. (ii) 122.4 lb./ac. (iii) Mn, Zn×Mn and Zn×Cu effects are highly significant. Effect of Cu is significant. Other effects are not significant. (iv) Mean and differential responses in lb./ac.

Differential response

	Mean response	Zn		Mn		Cu		Mo		B	
		−	+	−	+	−	+	−	+	−	+
Zn	38.16	—	—	108.70	−32.38	124.06	−47.74	12.52	63.80	46.07	30.25
Mn	57.07	127.61	−13.47	—	—	74.44	39.70	47.97	66.17	86.25	27.89
Cu	46.44	−132.34	−39.46	63.81	29.07	—	—	26.71	66.17	50.81	42.07
Mo	−5.08	−30.72	20.56	−14.18	4.02	−24.81	14.65	—	—	17.72	−27.88
B	−7.91	0.00	−15.82	21.27	−37.09	−3.54	−12.28	14.89	−30.71	—	—

S.E. of mean response =21.64 lb./ac.
S.E. of differential response =30.60 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 56(124).**
Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To find out a suitable combination of N, P and K for higher yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 17.7.1956. (iv) (a) Nil. (b) Drilling. (c) 60 lb./ac. (d) 18″ between rows. (e) —. (v) Nil. (vi) A.K.—12-24. (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 31.10.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=18$ and $P_2=36$ lb./ac.
(3) 3 levels of K_2O : $K_0=0$, $K_1=10$ and $K_2=20$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 1. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of looper. (iii) Pod yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 715 lb./ac. (ii) 81.47 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	Mean	K_0	K_1	K_2
P_0	675	687	708	690	667	647	756
P_1	702	696	781	726	776	672	731
P_2	612	840	737	730	719	696	775
Mean	663	741	742	715	721	671	754
K_0	648	704	810				
K_1	598	739	677				
K_2	743	780	739				

S.E. of any marginal mean =27.16 lb./ac.
S.E. of body of any table =47.04 lb./ac.

Crop :- Groundnut ***(Kharif).*** **Ref :- Gj. 59(88).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find out the optimum requirements of N, P and K, with and without F.Y.M. for Groundnut.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 25.6.1959. (iv) (a) 1 ploughing. (b) Dibbling. (c) 60 lb./ac. (d) 3′×6″. (e) 2 plants/hill. (v) Nil. (vi) Punjab—1 (medium). (vii) Unirrigated. (viii) 2 interculturings and 3 weedings. (ix) 57.54″. (x) 4.11.1959.

2. TREATMENTS:

Main-plot treatments:
2 levels of F.Y.M. : F_0=0 and F_1=10 C.L./ac.
Sub-plot treatments :
All combinations of (1), (2) and (3)
(1) 2 levels of N as A/S : N_0=0 and N_1=20 lb./ac.
(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=50 lb./ac.
(3) 2 levels of K_2O as Pot. Sul. : K_0=0 and K_1=25 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 8 sub-plots/main-plot. (b) 126′×96′. (iii) 6. (iv) (a) 63′×12′. (b) 60′×9′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Moderate attack of *tikka*. (iii) Pod yield. (iv) (a) 1952—1960 (modified in 1955-56). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 414.6 lb./ac. (ii) (a) 211.0 lb./ac. (b) 80.10 lb./ac. (iii) Only P effect is highly significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	P_0	P_1	K_0	K_1	Mean
F_0	396.5	439.0	364.0	471.5	409.5	426.0	417.8
F_1	400.0	422.5	365.8	456.7	406.8	415.8	411.3
Mean	398.3	430.8	364.9	464.1	408.2	420.9	414.6
K_0	404.8	411.5	361.5	454.8			
K_1	391.8	450.0	368.3	473.5			
P_0	354.0	375.8					
P_1	442.5	485.8					

S.E. of difference of two

1. F marginal means	=43.07 lb./ac.
2. N, P or K marginal means	=16.35 lb./ac.
3. N, P or K means at the same level of F	=23.12 lb./ac.
4. F means at the same level of N, P or K	=61.04 lb./ac.
S.E. of body of N×P, N×K or P×K table	=16.35 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 54(54).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find out P and K requirements of groundnut with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) 3′×4″. (e) 1. (v) Nil. (vi) Punjab—1. (vii) Unirrigated. (viii) 2 to 3 interculturings and 3 to 4 weedings. (ix) 38.33″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 : $P_0=0$, $P_1=24$ and $P_2=48$ lb./ac.
(2) 3 levels of K_2O : $K_0=0$, $K_1=27$ and $K_2=54$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 75′×12′. (b) 71′×6′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of aphids and *tikka*; no control measure taken. (iii) Height and spread at an interval of 15 days, pod and fodder yield. (iv) (a) 1952—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 878 lb./ac. (ii) (a) 148.5 lb./ac. (b) 117.1 lb./ac. (iii) F and K effects are significant. Other effects are not significant. (iv) Av. yield of pod in lb./ac.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	925	961	904	932	973	885	930
F_1	812	837	826	837	851	787	825
Mean	868	899	865	884	912	836	878
K_0	867	918	868				
K_1	855	963	918				
K_2	884	817	808				

S.E. of difference of two

1. F marginal means	=67.59 lb./ac.
2. P or K marginal means	=69.82 lb./ac.
3. P or K means at the same level of F	=39.02 lb./ac.
4. F means at the same level of P or K	=42.72 lb./ac.
S.E. of body of P×K table	=33.80 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 55(40).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find out N, P and K requirements with and without F.Y.M. of Groundnut in this tract.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 4.7.1955. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) 3′×4″. (e) 1 seed/dibble. (v) Nil. (vi) Punjab—1. (vii) Unirrigated. (viii) 3 weedings and 1 gap filling. (ix) 21.93″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M : $F_0=0$ and $F_1=10$ C.L./ac.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=20$ lb./ac.
(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=25$ lb./ac.
(3) 2 levels of K_2O as Pot. Sul : $K_0=0$ and $K_1=50$ lb./ac.

F, P_2O_5 and K_2O applied in furrows 15, 10 and 10 days before sowing respectively. N applied at sowing and 15 days after germination.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 50′×12′. (b) 44′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory due to late and scanty rain. (ii) Slight attack of aphids controlled by Nicotine sulphate spray. (iii) Pod and top yield. (iv) (a) 1952—contd. (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1334 lb./ac. (ii) (a) 207.7 lb./ac. (b) 113.0 lb./ac. (iii) Effect of P and interaction N×P are significant. Others are not significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	P_0	P_1	K_0	K_1	Mean
F_0	1305	1291	1256	1340	1292	1304	1298
F_1	1379	1361	1361	1379	1375	1365	1370
Mean	1342	1326	1308	1360	1333	1335	1334

S.E. of difference of two

1. F marginal means =46.44 lb./ac.
2. N, P or K marginal means =25.27 lb./ac.
3. N, P or K means at the same level of F =35.74 lb./ac.
4. F means at the same level of N, P or K =52.87 lb./ac.

Table of mean and differential responses for N P and K levels

Differential response

	Mean response	N		P		K	
		—	+	—	+	—	+
N	−15.92	—	—	42.74	−74.58	1.57	−33.41
P	15.98	109·64	−7.68	—	—	44.79	57.17
K	0.58	18.07	−16.91	−5.61	6.77	—	—

S.E. of mean response=25.27 lb./ac. S.E. of differential response=35.73 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 57(47).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find the N, P and K requirements with and without F.Y.M. of Groundnut

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 1.7.1957. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) 3′×4″. (e) One seed/dibble. (v) Nil. (vi) Punjab—1 (spreading time). (viii) Unirrigated. (viii) Two interculturings and three weedings. (ix) 30.21″. (x) 9.11.1957.

2. TREATMENTS:

Same as in expt. no. 55(40) on page 331.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block; 8 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 63′×15′. (b) 60′×9′. (v) 1½′×3′. (vi) Yes.

4. GENERAL

(i) Normal. (ii) Slight attack of *tikka* and aphids ; no control measures. (iii) Height and spread observations at an interval of 15 days, pod and fodder yield. (iv) (a) 1952—contd. (modified in 1955). (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Lack of rain after 15th August affected flowering and seed formation.

5. RESULTS :

(i) 610 lb./ac. (ii) (a) 127.0 lb./ac. (b) 93.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	P_0	P_1	K_0	K_1	Mean
F_0	596	666	622	640	622	640	631
F_1	582	595	572	605	599	579	589
Mean	590	631	598	623	611	610	610
K_0	584	637	595	626			
K_1	595	624	600	620			
P_0	562	633					
P_1	617	629					

S.E. of difference of two

1. F marginal means =25.92 lb./ac.
2. N,P or K marginal means =19.05 lb./ac.
3. N,P or K means at the same level of F =26.93 lb./ac.
4. F means at the same level of N, P or K =32.16 lb./ac.

S.E. of body of N×P, N×K or P×K table =19.05 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(37).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To find out the N, P and K requirements of groundnut with and without F.Y.M. in this tract.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Junagadh. (iii) 4.7.1958. (iv) (a) 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Punjab—1 (medium). (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 34″. (x) 16.11.1958.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. $F_0=0$ and $F_1=10$ lb./ac.

Sub-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of N : $N_0=0$ and $N_1=20$ lb./ac.
(2) 2 levels of P_2O_5 : $P_0=0$ and $P_1=50$ lb./ac.
(3) 2 levels of K_2O : $K_0=0$ and $K_1=25$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 8 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 63′×15′. (b) 60′×9′. (v) 1.5′×3′ (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of *tikka*. (iii) Pod yield. (vi) (a) 1952—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1442 lb./ac. (ii) (a) 242.40 lb./ac. (b) 131.08 lb./ac. (iii) Only P effect is highly significant. (iv) Av. yield in lb./ac.

	N_0	N_1	P_0	P_1	K_0	K_1	Mean
F_0	1422	1393	1313	1502	1411	1404	1407
F_1	1462	1489	1324	1556	1477	1474	1476
Mean	1442	1441	1353	1529	1444	1439	1441

S.E. of difference of two

1. F marginal means =49.48 lb./ac.
2. N, P or K marginal means =28.80 lb./ac.
3. N, P or K means at the same level of F =40.73 lb./ac.
4. F means at the same level of N, P or K =56.25 lb./ac.

Table of mean and Differential response for N, P and K levels

Differential response

	Mean response	N		P		K	
		−	+	−	+	−	+
N	−1.47	—	—	11.86	−12.80	47.73	−48.67
P	176.76	189.09	164.43	—	—	156.90	196.12
K	−5.38	42.82	−53.58	−25.24	14.48	—	—

S.E. of mean response=26.76 lb./ac. S.E. of differential response=37.84 lb./ac.

Crop :- Groundnut. **Ref :- Gj. 59(76).**
Site :- Trial-cum-Demonstration Farm, Kholwad. **Type :- 'M'.**

Object :—To find out the optimum dose and method of application of Super to Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A (ii) (a) Medium black. (b) N.A. (iii) 9 and 10.7.1959. (iv) (a) Two harrowings. (b) Drilling. (c) 60 lb./ac. (d) 2′. (e) N.A. (v) 3 C.L./ac. of F.Y.M. broadcast on 13.6.1959. (vi) A.H.—32. (vii) Unirrigated. (viii) Two interculturings and gap filling. (ix) 106.6″. (x) 20 to 25.11.1958.

2. TREATMENTS :

Main-plot treatments :

3 methods of applying P_2O_5 : M_1=Broadcasting (on 8.7.1959), M_2=Drilling in rows (on 9.7.1959) and M_3=Drilling between rows (on 3.8.1959).

Sub-plot treatments :

3 doses of P_2O_5 as Super : P_0=0, P_1=20 and P_2=40 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 42′×38′. (b) 36′×30′. (v) 3′×4′. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) *Tikka* disease was observed. (iii) Pod yield. (iv) (a) 1959—contd. (b) and (c) —. (v) (a) and (b) N.A. (vi) Due to floods in Tapti river there was about 6′ deep water in the exptl. area which affected the yield. (vii) Nil.

5. RESULTS :

(i) 457 lb./ac. (ii) (a) 98.30 lb./ac. (b) 88.30 lb./ac. (iii) None of the effects is significant. (iv) Av yield of pod in lb./ac.

	M_1	M_2	M_3	Mean
P_0	425	457	413	432
P_1	535	503	446	495
P_2	428	465	438	444
Mean	463	475	432	457

S.E. of difference of two

1. M marginal means	=32.77 lb./ac.
2. P marginal means	=29.43 lb./ac.
3. P means at the same level of M	=50.98 lb./ac.
4. M means at the same level of P	=52.97 lb./ac.

Crop :- Groundnut ***(Kharif).*** **Ref :- Gj. 55(55).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out N, P and K requirments of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 24.7.1955. (iv) (a) N.A. (b) Drilling. (c) 30 lb./ac. (d) Between rows 18″. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) A.H.—32 (early). (vii) Unirrigated. (viii) Three interculturings and 2 weedings. (ix) 27.20″. (x) 26.10.1955 and 28.10.1955.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N_0=0, N_1=10 and N_2=20 lb./ac,
(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=50 and P_2=100 lb./ac.
(3) 3 levels of K_2O as Potash : K_0=0, K_1=100 and K_2=200 lb./ac.

N applied in two doses ; first spread at sowing and second six weeks after sowing.

3. DESIGN :

(i) 3^3 confounding NPK^2 in both replications. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 21′×36′. (b) 15′×30′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) pod and stalk yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1280 lb./ac. (ii) 173.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	Mean
K_0	1363	1218	1212	1438	1218	1137	1264
K_1	1320	1252	1236	1292	1199	1317	1269
K_2	1307	1274	1340	1304	1364	1252	1037
Mean	1330	1248	1262	1345	1260	1235	1280
P_0	1419	1257	1358				
P_1	1308	1203	1269				
P_2	1262	1284	1160				

S.E. of any marginal mean =40.85 lb./ac.
S.E. of body of any table =70.75 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 56(66).**
Site :- Agri. Res. Stn., Talod. Type :- 'M'.

Object .—To find out N, P and K requirements of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Sandy *Goradu*. (b) Refer soil analysis, Talod. (iii) 22.6.1956. (iv) (a) N.A. (b) Drilling. (c) 30 lb./ac. (d) 18″ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) A.H.—32. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 40.59″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(55) on page 334.

3. DESIGN :

(i) 3^3 confounding. NPK^2 in both replications. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 36′×21′. (b) 30′×15′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Attack of aphids. (iii) Pod yield. (iv) (a) 1955—contd. (b) No. (c) Nil (v) (a) and (b) N.A. (vi) Late rain affected the yield and growth. (vii) Nil.

5. RESULTS :

(i) 1836 lb./ac. (ii) 199.8 lb./ac. (iii) K effect alone is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	Mean
K_0	1806	1694	1678	1650	1863	1665	1726
K_1	1857	1868	1882	1865	1798	1945	1869
K_2	1804	1950	1983	1890	1956	1892	1913
Mean	1823	1837	1848	1802	1872	1834	1836
P_0	1739	1871	1794				
P_1	1813	1843	1961				
P_2	1916	1798	1788				

S.E. of any marginal mean =47.1 lb./ac.
S.E. of body of any table =81.6 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 57(72).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out the N, P and K requirements of Groundnut with and without F.Y.M.

1 BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Sandy *Goradu*. (b) Refer soil analysis, Talod. (iii) 30.6.1957. (iv) (a) N.A. (b) Drilling. (c) 30 lb./ac. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) A.H.—32. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 14.99″. (x) 29.9.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 59(64) on page 327.

4. GENERAL:

(i) Below normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1955—contd. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 898 lb./ac. (ii) (a) 50.90 lb./ac. (b) 71.82 lb./ac. (iii) (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	889	860	912	890	868	903	858	859	943	887
F_1	878	912	941	884	943	901	867	919	945	910
Mean	883	886	926	888	905	902	862	889	944	898
K_0	812	860	915	825	869	893				
K_1	879	905	882	906	866	894				
K_2	958	892	981	933	980	917				
P_0	902	822	941							
P_1	891	904	920							
P_2	855	931	918							

S.E. of difference of two

1. N. P or K marginal means =16.96 lb./ac.
2. F marginal means =19.54 lb./ac.
3. F means at the same level of N, P or K =33.85 lb./ac.
4. N, P or K means at the same level of F =29.33 lb./ac.

S.E. of body of N×P, N×K or P×K table =20.78 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(58).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out the N, P and K requirements of Groundnut with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Sandy *Goradu* (b) Refer soil analysis, Talod. (iii) 23.6.1958. (iv) (a) N.A. (b) Drilling. (c) 30 lb./ac. (d) 18″ between rows. (e) N.A. (v) Nil. (vi) A.H.—32 (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 19.19″. (x) 15.8.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 59(64) on page 327.

4. GENERAL:

(i) Normal. (ii) Collar rot. (iii) Pod yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1546 lb./ac. (ii) (a) 203.3 lb./ac. (b) 170.2 lb./ac. (iii) N effect alone is highly significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	1543	1397	1752	1521	1612	1559	1586	1569	1537	1564
F_1	1478	1500	1602	1478	1526	1575	1473	1548	1559	1526
Mean	1511	1449	1677	1500	1569	1567	1529	1559	1548	1546
K_0	1492	1411	1686	1613	1468	1508				
K_1	1540	1492	1645	1468	1645	1565				
K_2	1500	1444	1702	1419	1597	1629				
P_0	1557	1315	1629							
P_1	1524	1540	1645							
P_2	1452	1492	1758							

S.E. of difference of two.

1. N, P or K marginal means =67.77 lb./ac.
2. F marginal means =46.32 lb./ac.
3. F means at the same level of N, P or K =80.23 lb./ac.
4. N, P or K means at the same level of F =88.37 lb./ac.

S.E. of body of N×P, N×K or P×K table =83.00 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 57(109).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out the N, P and K requirements of Groundnut with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mug*. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 30.6.1957. (iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 30 lb./ac. (d) 18″ between rows. (e)—. (v) Nil. (vi) A.H.—32 (early). (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 14.59″. (x) 29.9.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 59(64) on page 327.

4. GENERAL :

(i) Good. (ii) Attack of collar rot. (iii) Pod and top yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 898 lb./ac. (ii) (a) 51.30 lb./ac. (b) 71.83 lb./ac. (iii) K effect alone is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	888	860	911	890	867	902	858	859	943	886
F_1	878	911	941	887	943	900	866	919	944	910
Mean	883	886	926	888	905	901	862	889	944	898
K_0	812	859	915	825	869	893				
K_1	879	905	882	906	866	894				
K_2	959	892	980	933	980	917				
P_0	902	822	940							
P_1	891	904	920							
P_2	855	931	917							

S.E. of difference of two

1. N, P or K marginal means =17.10 lb./ac.
2. F marginal means =19.55 lb./ac.
3. F means at the same level of N, P or K =33.86 lb./ac.
4. N, P or K means at the same level of F =29.42 lb./ac.

S.E. of body of N×P, N×K or P×K table =20.94 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(78).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out the N, P and K requirements of Groundnut with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil, (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 23.6.1958. (iv) (a) 1 ploughing and 3 harrowings. (b) N.A. (c) 30 lb./ac. (d) 18″ between rows. (e) —. (v) Nil. (vi) A.H.—32 (early). (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 27.9″. (x) 15.8.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 59(64) on page 327,

4. GENERAL :

(i) Normal. (ii) Attack of collar rot and white ant. (iii) Pod and top yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1573 lb./ac. (ii) (a) 131.3 lb./ac. (b) 172.5 lb./ac. (iii) N effect alone is highly significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	1543	1506	1769	1645	1613	1559	1586	1586	1645	1606
F_1	1479	1500	1645	1543	1506	1576	1452	1613	1559	1541
Mean	1511	1503	1707	1594	1559	1567	1519	1599	1602	1573
K_0	1492	1412	1654	1613	1436	1508				
K_1	1541	1492	1766	1589	1645	1565				
K_2	1500	1605	1702	1581	1597	1629				
P_0	1557	1476	1750							
P_1	1524	1541	1613							
P_2	1452	1492	1758							

S.E. of difference of two

1. N, P or K marginal means =43.77 lb./ac.
2. F marginal means =46.95 lb./ac.
3. F means at the same level of N, P or K =81.32 lb./ac.
4. N, P or K means at the same level of F =72.26 lb./ac.

S.E. of body of N×P, N×K or P×K table =53.60 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 59(61).**

Site :- Agri. Res. Stn., Talod. **Type :- 'M'.**

Object :—To find out the N, P and K requirements of Groundnut with and without F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moth*. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Talod. (iii) 27.6.1959. (iv) (a) 1 ploughing and 3 harrowings. (b) N.A. (c) 30 lb./ac. (d) 18″ between rows. (e) —. (v) Nil. (vi) A.H.—32 (early). (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 53.68″. (x) 12.10.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 59(64) on page 327.

4. GENERAL :

(i) Normal. (ii) Attack of collar rot and white ant. (iii) Pod and top yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1362 lb./ac. (ii) (a) 172.3 lb./ac. (b) 131.3 lb./ac. (iii) F and P effects are significant. Other effects are not significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	1244	1359	1335	1082	1454	1401	1259	1346	1334	1313
F_1	1435	1360	1437	1194	1554	1485	1397	1417	1419	1411
Mean	1340	1360	1386	1138	1504	1443	1328	1381	1377	1362
K_0	1321	1313	1349	1034	1448	1500				
K_1	1359	1415	1369	1137	1528	1478				
K_2	1339	1351	1440	1242	1536	1351				
P_0	966	1176	1272							
P_1	1540	1506	1466							
P_2	1513	1397	1420							

S.E. of difference of two

1. N, P or K marginal means =57.43 lb./ac.
2. F marginal means =35.73 lb./ac.
3. F means at the same level of N, P or K =61.89 lb./ac.
4. N, P or K means at the same level of F =72.21 lb./ac.

S.E. of body of N×P, N×K or P×K table =70.34 lb./ac.

Crop :- Groundnut ***(Kharif)*****.** **Ref :- Gj. 56(109).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black (b) Refer soil analysis, Umrala (iii) 8.7.1956. (iv) (a) Nil. (b) Drilling. (c) 50 lb./ac. (d) 2′ between rows. (e) —. (v) Nil. (vi) A.K.—12-24. (vii) Irrigated. (viii) Three weedings, one interculturing and gap-filling. (ix) N.A. (x) 27 and 28.10.1956.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
(3) 3 levels of K_2O as Muriate of Potash : $K_0=0$, $K_1=20$ and $K_2=40$ lb./ac.

Fertilizers applied at sowing.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) 30′×12′. (b) 26′×8′. (v) 2′×2′. (v) Yes.

4. GENERAL :

(i) Good. (ii) Attack of aphids—nicotine sulphate sprayed. (iii) Pod and top yield. (iv) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1261 lb./ac. (ii) 157.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	P_0	P_1	P_2
K_0	1309	1248	1278	1278	1226	1291	1318
K_1	1217	1248	1265	1243	1230	1283	1217
K_2	1252	1283	1252	1262	1239	1270	1278
Mean	1259	1259	1265	1261	1232	1281	1271
P_0	1213	1261	1222				
P_1	1300	1226	1318				
P_2	1265	1291	1256				

S.E. any marginal mean =26.23 lb./ac.
S.E. body of any table =45.43 lb./ac.

Crop :- Groundnut and Sesamum. **Ref :- Gj. 56 to 59(MAE).**

Site :- M.A.E. Farm, Umrala. **Type :- 'M'.**

Object :—To study the effect of direct application of P_2O_5 to legumes and its residual effect on cereal crop under irrigated condition.

1. BASAL CONDITIONS :

(i) (a) Groundnut, Sesamum—Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 7.7.1959 for 1959 year crop. N.A. for other years. (iv) (a) One ploughing and 1 harrowing. (b) Drilling. (c) Groundnut at 80 lb./ac. and sesamum at 3 lb./ac. (d) 18″ between rows. (e) —. (v) Nil. (vi) Groundnut A.K. 12-24 ; Sesamum S. 4-6. (vii) Unirrigated. (viii) Nil. (ix) 25.98″ during 1959 crop. N.A. for other years. (x) For 1959 crop it is 20.10.1959. N.A. for other years.

2. TREATMENTS :

3 levels of P_2O_5 applied to each of the two oilseed crops : $P_0=0$, $P_1=40$ and $P_2=80$ lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 for each crop. (b) 43′×84′. (iii) 3 for each crop. (iv) (a) 43′×12′. (b) 60′×6′. (v) 1.5′×3′. (vi) Yes.

4 GENERAL :

(i) Good. (ii) N.A. (iii) Pod and grain yield. (iv) 1956—contd. (b) Yes. (c) N.A. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) N.A.

5. RESULTS :

All figures in lb./ac.

	Groundnut				Sesamum			
Av. yield	1956	1957	1958	1959	1956	1957	1958	1959
P_0	741	576	971	518	448	346	420	255
P_1	908	880	1103	609	540	510	502	280
P_2	1225	1029	1177	683	670	568	609	313
G.M.	958	828	1084	603	553	475	510	283
S.E./plot	86.2	63.2	80.0	52.9	53.4	92.0	51.0	7.8
S.E./mean	49.8	36.5	46.2	30.5	30.8	53.1	29.4	4.5
Significance	H.S.	H.S.	N.S.	N.S.	S.	N.S.	S.	H.S.

N.B. :—H.S. denotes highly significant ; S denotes significant and N.S. denotes not significant.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 59(132).**

Site :- Dry Farming Res. Stn., Jamkhambhalia. Type :- 'MV'.

Object :—To find out the optimum dose of N, P and K with different varieties of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Shallow. (b) N.A. (iii) 10.7.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) 80 lb./ac. (d) 2′ between rows. (e)—. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 3 interculturings. (ix) 44″. (x) 7.11.1959.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 3 varieties of groundnut : V_1=Local, V_2=AK—12-24 and V_3=AH-32

(2) 3 levels of N as A/S : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.

(3) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.

Sub-plot treatments :

2 levels of K_2O as Pot. Sol. : $K_0=0$ and $K_1=40$ lb./ac.

N top dressed and P_2O_5 drilled at sowing.

3. DESIGN :

(i) $3^3 \times 2$ split-plot. (ii) (a) 3 blocks/replication; 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 36′×21′. (b) 30′×15′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of *tikka*. (iii) Pod yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 569 lb./ac. (ii) (a) 188.0 lb./ac. (b) 100.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	V_1	V_2	V_3	N_0	N_1	N_2	P_0	P_1	P_2	Mean
K_0	621	551	492	494	529	640	516	559	589	555
K_1	648	529	572	559	575	615	545	562	642	583
Mean	635	540	532	527	552	628	531	561	616	569
P_0	540	528	524	448	553	593				
P_1	678	476	528	597	476	609				
P_2	686	617	544	536	629	682				
N_0	573	524	484							
N_1	637	553	468							
N_2	694	544	645							

S.E. of difference of two

1. V, N or P marginal means =62.67 lb./ac.
2. K marginal means =27.22 lb./ac.
3. K means at the same level of V, N or P =47.14 lb./ac.
4. V, N or P means at the same level of K =70.98 lb./ac.

S.E. of body of P×V, P×N or N×V table =76.75 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 58(70).**

Site :- Agri. Res. Stn., Amreli. Type :- 'C'.

Object :—To find out the economic seed rate and spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) 30 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e)—. (v) Nil. (vi) AH—32. (vii) Unirrigated. (viii) N.A. (ix) 28.50″. (x) N.A.

2. TREATMENTS:

Main-plot treatments :

3 spacings between rows : S_1=18″, S_2=24″ and S_3=30″.

Sub-plot treatments :

3 seed rates : R_1=60, R_2=80 and R_3=100 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30′×40′. (b) 24′×34′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Pod yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 737 lb./ac. (ii) (a) 88.75 lb./ac. (b) 79.50 lb./ac. (iii) Main effects of S and R are significant. Interaction is not significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	778	752	556	695
R_2	860	768	558	728
R_3	925	840	597	787
Mean	854	786	570	737

S.E. of difference of two

1.	S marginal means	=36.66 lb./ac.
2.	R marginal means	=32.46 lb./ac.
3.	R means at the same level of S	=56.22 lb./ac.
4.	S means at the same level of R	=59.25 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 59(45).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'C'.**

Object :—To find out the economic seed rate and spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) —. (v) Nil. (vi) AH—32. (vii) Unirrigated. (viii) N.A. (ix) 45.56″. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(70) on page 341.

4. GENERAL :

(i) and (ii) N.A. (iii) Pod yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 349 lb./ac. (ii) (a) 125.3 lb./ac. (b) 31.4 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	411	325	297	344
R_2	472	348	251	357
R_3	523	287	232	347
Mean	469	320	260	349

S.E. of difference of two

1. S marginal means =51.14 lb./ac.
2. R marginal means =12.83 lb./ac.
3. R means at the same level of S =56.22 lb./ac
4. S means at the same level of R =66.64 ib./ac.

Ceop :- Groundnut *(Kharif)*. **Ref :- Gj. 54(32).**

Site :- Agri. Res. Stn., Dohad. **Type :- 'C'.**

Object :—To find out the economic seed rate and spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—Fallow—Groundnut. (b) Fallow. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium brown. (b) Refer soil analysis, Dohad. (iii) 19 and 20.7.1954. (iv) (a) N.A. (b) Sown by plough. (c) As per treatments. (d) Between plants—irregular. Between rows—as per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Spanish—5. (vii) Unirrigated. (viii) Interculturing by plough and hand weeding. (ix) 49.29″. (x) 8 to 15.11.1954.

2. TREATMENTS :

Main-plot treatments :

3 spacing between rows : $S_1=12''$, $S_2=15''$ and $S_3=18''$.

Sub-plot treatments :

3 seed rates : $R_1=80$, $R_2=100$ and $R_3=120$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6 (iv) (a) $36' \times 21'$ for S_1, $36' \times 22.5'$ for S_2 and $36' \times 24'$ for S_3. (b) $30' \times 15'$. (v) 3 rows on either side and 3′ at either end of the net plot. (vi) Yes.

4. GENERAL :

(i) Good germination and vigorous growth. Heavy rainfall during September, 1954. (ii) *Tikka* disease. (iii) Pod yield. (iv) (a) 1952—1954. (b) and (c) No. (v) (a) Deesa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 840 lb./ac. (ii) (a) 150.2 lb./ac. (b) 112.0 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	747	898	987	877
R_2	787	770	952	836
R_3	693	811	914	806
Mean	742	826	951	840

S.E. of difference of two

1. S marginal means =50.1 lb./ac.
2. R marginal means =37.3 lb./ac.
3. R means at the same level of S =64.7 lb./ac.
4. S means at the same level of R =72.7 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 55(26).**

Site:- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable sowing date for Groundnut.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) 100 lb./ac. of A/S. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) 50 lb./ac. (d) 18″ between rows. (e) N.A. (v) 300 lb./ac. of manure mixture+200 lb./ac. of P_2O_5 broadcast on 29.5.1955. (vi) AK—12-24. (vii) Irrigated. (viii) 2 interculturings. (ix) 13.25″. (x) 8.10.1955 to 13.10.1955.

2. TREATMENTS :

4 sowing dates : D_1=1.6.1955, D_2=15.6.1955, D_3=1.7.1955 and D_4=15.7.1955.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A.(vi) and (vii) Nil.

5. RESULTS :

(i) 1165 lb./ac. (ii) 98.66 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of pod in lb./ac.

Treatment	D_1	D_2	D_3	D_4
Av. yield	1285	1343	1241	792

S.E./mean =40.28 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 57(24).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out suitable dates of sowing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (ii) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) N.A. (b) Harrowing. (c) to (e) N.A. (v) 200 lb./ac. of mono-super before sowing. (vi) AK—12-24. (vii) Irrigated. (viii) Gap-filling, interculturing and weeding. (x) 15.09″. (x) N.A.

2. TREATMENTS:

5 dates of sowing : D_1=15.6.1957, D_2=22.6.1957, D_3=1.7.1957, D_4=6.7.1957 and D_5=18.7.1957.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40′×14′. (b) 34′×7½′. (v) Two rows on each side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height of plant. width of plant, no. of pods and pod yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 490 lb./ac. (ii) 66.75 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of pod in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	454	552	556	460	428

S.E./mean =29.83 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(18).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :- To find out suitable dates of sowing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) *Bajra*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) As per treatments. (iv) (a) 1 harrowing. (b) Drilling. (c) 60 lb./ac. (d) 18″ between rows. (e) N.A. (v) 200 lb./ac. of P_2O_5 before sowing. (vi) AK—12-24. (vii) Irrigated. (viii) 1 interculturing and 2 weedings. (ix) 13″. (x) 15, 17, 20 and 22.10.1958.

2. TREATMENTS :

5 dates of sowing : D_1=15.6.1958, D_2=22.6.1958, D_3=29.6.1958, D_4=6.7.1958 and D_5=13.7.1958.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40′×14′. (b) 34′×7½′. (v) 3′×3′. (vi) Yes.

4. GENERAL

(i) Good. (ii) Yellow leaf and *tikka* disease. (iii) Pod yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Junagadh. (b) N.A. (vi) Nil. (vii) As the layout plan is not available, the experiment is analysed as R.B.D.

5. RESULTS :

(i) 1223 lb./ac. (ii) 144.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of pod in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	1424	1157	1338	1321	873

S.E./mean =64.4 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 55(27).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To study the most suitable spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 29.6.1955. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) Varies between 30 and 120 lb./ac. according to spacing. (d) As per treatments. (e)—. (v) 200 lb./ac. of P_2O_5 on 20.6.1955. (vi) Samrala no. 1. (vii) Irrigated. (viii) 2 interculturings. (ix) 13.75″. (x) 2 and 3.11.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 row spacings : R_1=2′ and R_2=3′.
(2) 3 plant spacings : S_1=2″, S_2=4″ and S_3=6″.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) 51′×18′. (b) 45′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2794 lb./ac. (ii) 400.5 lb./ac. (iii) Only effect of R is highly significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	3566	3017	2794	3126
R_2	2503	2503	2380	2462
Mean	3035	2760	2587	2794

S.E. of marginal mean of S =163.5 lb./ac.
S.E. of marginal mean of R =133.5 lb./ac.
S.E. of body of table =231.2 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 56(25).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To study the most suitable spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 300 lb./ac. of P_2O_5. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 8.7.1956. (iv) (a) 2 harrowings. (b) Dibbling. (c) 60 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Samrala no. 1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 33.75″. (x) 15.11.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(27) on page 345.

3. GENERAL

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 916 lb./ac. (ii) 112.0 lb./ac. (iii) Effects of R and S are highly significant. Interaction is not significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	921	742	694	786
R_2	1159	983	1000	1047
Mean	1040	862	847	916

S.E. of marginal mean of R =32.3 lb./ac.
S.E. of marginal mean of S =39.6 lb./ac.
S.E. of body of table =56.0 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 57(25).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'C'.**

Object :—To find out the suitable spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 1.7.1957. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) 200 lb./ac. of Super. (vi) Samrala no. 1. (vii) Irrigated. (viii) Interculturings and weedings. (ix) 15.09″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 345.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) One row on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 949 lb./ac. (ii) 117.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	1057	916	872	948
R_2	990	986	873	950
Mean	1024	951	872	949

S.E. of marginal mean of R =33.9 lb./ac.
S.E. of marginal mean of S =41.6 lb./ac.
S.E. of body of table =58.8 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 59(126).**
Site :- Dry Farming Res. Stn., Jam-khambhalia. **Type :- 'C'.**

Object :—To find out the effect of intercultures on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) Nil. (ii) (a) Shallow. (b) N.A. (iii) 10.7.1959. (iv) (a) 2 ploughings. (b) Drilling. (c) 80 lb./ac. (d) 2′ between rows. (e) —. (v) Nil. (vi) AK—12-24. (vii) Unirrigated. (viii) As per treatments. (ix) 44″. (x) 6.11.1959.

2. TREATMENTS :

1. No interculture.
2. One interculturing 6 weeks after sowing.
3. Two interculturings 4 and 6 weeks after sowing.
4. Three interculturings 4, 6 and 8 weeks after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 96′×30′. (iii) 6. (iv) (a) 24′×30′. (b) 18′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Attack of *tikka.* (iii) Pod yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 156 lb./ac. (ii) 140.5 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of pod in lb./ac.

Treatment	1	2	3	4
Av. yield	130	109	227	160

S.E./mean =57.35 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 59(122).**
Site :- Dry Farming Res. Stn., Jam-khambhalia. **Type :- 'C'.**

Object :—To study the effect of spacing and seed rate on the yield of Groundnut.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Shallow. (b) N.A. (iii) 13.7.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) AK—12-24. (vii) Unirrigated. (viii) 3 interculturings. (ix) 44″. (x) 7.11.1959.

2. TREATMENTS:

Main-plot treatments:

3 spacings between rows : S_1=12″, S_2=24″ and S_3=36″.

Sub-plot treatments:

3 seed rates : R_1=60, R_2=80 and R_3=100 lb./ac.

3. DESIGN

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 45′×30′. (b) 39′×24′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of *tikka*. (iii) Pod yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 463 lb./ac. (ii) (a) 159.0 lb./ac. (b) 74.6 lb./ac. (iii) Main effect of S alone is significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	Mean
S_1	601	535	531	556
S_2	450	434	454	446
S_3	345	380	440	388
Mean	465	450	475	463

S.E. of difference of two

1. S marginal means =53.0 lb./ac.
2. R marginal means =24.9 lb./ac.
3. R means at the same level of S =43.1 lb./ac.
4. S means at the same level of R =63.6 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 55(100).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object :—To find out optimum spacing for Groundnut.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 40 lb./ac. (d) As per treatments. (e) 2 seeds/dibble. (v) 20 lb./ac. of N as A/S top dressed on 12.9.1955. (vi) Samarala no. 1. (vii) Irrigated. (viii) 2 interculturings and 1 weeding. (ix) 12.29″. (x) 2.12.1955.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings between rows : $R_1=2'$ and $R_2=3'$.

(2) 3 spacings between plants : $S_1=3''$, $S_2=4''$ and $S_3=6''$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of *tikka*. (iii) Pod yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Raw data and plot size—N.A.

5. RESULTS :

(i) 1908 lb./ac. (ii) N.A. (iii) Treatment differences are highly significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	2098	2163	1976	2079
R_2	1921	1708	1583	1737
Mean	2009	1935	1779	1908

S.E's =N.A.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 56(117).**

Site :- Agri. Res. Farm, Jamnagar. **Type :- 'C'.**

Object :—To find out the optimum spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 9.7.1956. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) Samrala no. 1. (vii) Unirrigated. (viii) N.A. (ix) 29.03″. (x) 9.11.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(100) on page 348.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Pod yield. (iv) (a) 1955—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Raw data and plot size N.A.

5. RESULTS :

(i) 1707 lb./ac. (ii) N.A. (iii) Treatment differences are not significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	1680	1686	1686	1684
R_2	1866	1746	1580	1731
Mean	1773	1716	1633	1707

S.E's =N.A.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 54(55).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To determine the optimum spacing between rows and plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 5.C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Punjab—1 (medium). (vii) Unirrigated. (viii) 3 interculturings and 4 weedings. (ix) 38.33″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 345.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50′×12′. (b) 44′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 984 lb./ac. (ii) 81.33 lb./ac. (iii) Only S effect is highly significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	999	948	981	976
R_2	1100	959	921	993
Mean	1049	954	951	984

S.E. of marginal mean of R =19.17 lb./ac.
S.E. of marginal mean of S =23.48 lb./ac.
S.E. of body of table =33.20 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 55(41).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To determine the optimum spacing between plants and between rows for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 5 C.L. ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Punjab—1 spreading type (medium). (vii) Unirrigated. (viii) 3 interculturings and 4 weedings. (ix) 21.93″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 345.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50′×12′. (b) 44′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Pod and fodder yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 692 lb./ac. (ii) 94.79 lb./ac. (iii) Effects of S and R are highly significant. Interaction is not significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	901	773	724	799
R_2	672	566	519	586
Mean	786	669	622	692

S.E. of marginal mean of R =22.34 lb./ac.
S.E. of marginal mean of S =27.36 lb./ac.
S.E. of body of table =38.70 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 56(41).**

Site :- Central Expt. Stn., Junagadh. **Type .- 'C'.**

Object :—To determine the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/hole. (v) 5 C.L./ac. of F.Y.M applied in furrows 15 days before sowing. (vi) Punjab—1 (spreading type). (vii) Unirrigated. (viii) 2-3 interculturings and 3-4 weedings. (ix) 59.56″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 345.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 50′×12′. (b) 44′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) *Tikka* and aphids, considerable damage. No control measures taken. (iii) Pod and fodder yield. (iv) (a) 1951—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1863 lb./ac. (ii) 229.4 lb./ac. (iii) Main effect of S is highly significant. Effect of R and interaction S×R are significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	2228	1810	1919	1986
R_2	2176	1753	1289	1739
Mean	2202	1781	1604	1863

S.E. of R marginal mean = 66.2 lb./ac.
S.E. of S marginal mean = 81.1 lb./ac.
S.E. of body of table = 114.7 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 57(48).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To determine the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 18.7.1957. (iv) (a) 2-3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 10 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Punjab—1 (spreading type). (vii) Unirrigated. (viii) 2 interculturings and 2 weedings. (ix) 30.21″. (x) 1.11.1957.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 spacings between rows : $R_1=1'$, $R_2=1.5'$, $R_3=2'$ and $R_4=3'$.
(2) 3 spacings between plants : $S_1=2''$, $S_2=4''$ and $S_3=6''$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 63′×12′. (b) 60′×6′. (v) 1½′×3′. (vi) Yes.

4. GENERAL :

(i) Germination good. Growth normal. (ii) *Tikka* and aphids trouble. Damage was negligible, hence no control measures taken. (iii) Height and spread measurements at intervals of 15 days, pod and fodder yield. (iv) (a) 1951—contd. (modified in 1957). (b) and (c) No. (v) (a) and (b) N.A. (vi) Crop was affected due to lack of rains. (vii) Nil.

5. RESULTS :

(i) 561 lb./ac. (ii) 119.2 lb./ac. (iii) Main effect of S is highly significant and interaction S×R is significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	673	609	517	685	635
S_2	545	515	560	620	560
S_3	420	446	590	496	488
Mean	546	523	574	600	561

S.E. of R marginal mean =34.4 lb./ac.
S.E. of S marginal mean =29.8 lb./ac.
S.E. of body of table =59.8 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref -: Gj. 58(38).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To find out the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 9.7.1958. (iv) (a) 1 harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Punjab—1 (medium). (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 34″. (x) 18.11.1958.

2. TREATMENTS :

Same as in expt. no. 57(48) on page 351.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 50′×12′. (b) 45′×6′. (v) 2.5′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Incidence of *tikka*. No control measures taken. (iii) Pod yield. (iv) (a) 1951—contd (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1015 lb./ac. (ii) 141.3 lb./ac. (iii) Only effect of R is highly significant. (iv) Av. yield of pods in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	978	958	1120	1124	1045
S_2	903	907	1220	1069	1025
S_3	993	849	1069	995	976
Mean	958	905	1136	1063	1015

S.E. of R marginal mean =40.8 lb./ac.
S.E. of S marginal mean =35.3 lb./ac.
S.E. of body of table =70.7 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 59(87).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To find out a suitable spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 22.6.1959. (iv) (a) 1 ploughing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 2 seeds/dibble. (v) Nil. (vi) Punjab—1 (spreading type). (vii) Unirrigated. (viii) 2 interculturings and 3 weedings. (ix) 57.54″. (x) 29.10.1959.

2. TREATMENTS:

Same as in expt. no. 57(48) on page 351.

3. DESIGN:

(i) R.B.D. (ii) (a) 12. (b) 63′×144′. (iii) 4. (iv) (a) 63′×12′. (b) 60′×6′. (v) 1.5′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Moderate attack of *tikka*. (iii) Pod and top yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 380 lb./ac. (ii) 83.61 lb./ac. (iii) Main effects of R and S are highly significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	83	209	351	340	246
S_2	180	374	515	571	410
S_3	232	499	659	546	484
Mean	165	361	508	486	380

S.E. of R marginal mean =24.14 lb./ac.
S.E. of S marginal mean =20.90 lb./ac.
S.E. of body of table =41.80 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 55(42).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To find out the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 2-3 ploughings and harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) AK—12-24 (medium). (vii) Unirrigated. (viii) 2 interculturings and 3 weedings. (ix) 21.93″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 345.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50′×12′. (b) 44′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod and fodder yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 987 lb./ac. (ii) 128.7 lb./ac. (iii) Effects of R and S are highly significant. Interaction is not significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	1212	962	1017	1064
R_2	1000	959	771	910
Mean	1106	960	894	987

S.E. of R marginal mean =30.3 lb./ac.
S.E. of S marginal mean =37.2 lb./ac.
S.E. of body of table =52.5 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 56(42).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To find out the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) AK—12-24 (bunch type). (vii) Unirrigated. (viii) 2-3 interculturings and 3-4 weedings. (ix) 59.56″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 55(27) on page 345.

3. DESIGN :

(i) Fact. in R B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 50′×12′. (b) 44′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Germination and growth normal. (ii) *Tikka* and aphids attack—damage negligible. No control measures taken. (iii) Pod and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 938 lb./ac. (ii) 73.79 lb./ac. (iii) Main effects of R and S are highly significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	1367	1089	954	1137
R_2	861	768	588	739
Mean	1114	929	771	938

S.E. of R marginal mean =21.30 lb./ac.
S.E. of S marginal mean =26.09 lb./ac.
S.E. of body of table =36.89 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 57(49).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To determine the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 12.7.1957. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 seed/dibble. (v) 10 C.L./ac. of F.Y.M. in furrows 15 days before sowing. (vi) A.K.—12-24 (bunch type). (vii) Unirrigated. (viii) 2 interculturings and 2 to 3 weedings. (ix) 30.21″. (x) 18.10.1957.

2. TREATMENTS :

Same as in expt. no. 57(48) on page 351.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 63′×12′. (b) 60′×6′. (v) 1½′×3′. (vi) Yes.

4. GENERAL :

(i) Germination good and growth normal. (ii) Aphids and *tikka* attack—damage negligible. No control measures taken. (iii) Height and spread at the interval of 15 days. Pod and fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) Crop damaged due to no rains after first fortnight of August. (vii) Nil.

5. RESULTS :

(i) 725 lb./ac. (ii) 116.1 lb./ac. (iii) Main effect of R is highly significant and effect of S is significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	832	809	824	681	787
S_2	824	771	764	567	732
S_3	771	733	590	537	658
Mean	809	771	726	595	725

S.E. of R marginal mean =33.5 lb./ac.
S.E. of S marginal mean =29.0 lb./ac.
S.E. of body of table =58.0 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(39).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To find out the optimum spacing between plants and between rows for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 13.7.1958. (iv) (a) 1 harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) A.K.—12-24 (medium). (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 34″. (x) 6.11.1958.

2. TREATMENTS :

Same as in expt. no. 57(48) on page 351.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 63′×12′. (b) 60′×6′. (v) 1.5′×6′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Incidence of *tikka*. No control measures taken. (iii) Pod yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1153 lb./ac. (ii) 182.6 lb./ac. (iii) Only effect of R is highly significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	1203	1360	1278	908	1187
S_2	1475	1112	1063	889	1134
S_3	1392	1100	1146	915	1138
Mean	1357	1191	1163	904	1153

S.E. of R marginal mean =52.7 lb./ac.
S.E. of S marginal mean =45.6 lb./ac.
S.E. of body of table =91.3 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 59(86).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To find out the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 2.7.1959. (iv) (a) 1 ploughing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 2 plants/dibble. (v) Nil. (vi) A.K.—12-24 (medium). (vii) Unirrigated. (viii) 2 interculturings and 2 weedings. (ix) 57.54″. (x) 26.10.1959.

2. TREATMENTS :

Same as in expt. no. 57(48) on page 351.

3. DESIGN:

(i) R.B.D. (ii) (a) 12. (b) 63′×144′. (iii) 4. (iv) (a) 63′×12′. (b) 60′×6′. (v) 1.5′×3′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Heavy attack of *tikka*. (iii) Pod and top yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Abnormal season. (vii) Nil.

5. RESULTS :

(i) 297 lb./ac. (ii) 133.2 lb./ac. (iii) Main effect of R alone is highly significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	64	332	331	362	272
S_2	103	364	372	342	295
S_3	107	423	345	425	325
Mean	91	373	349	376	297

S.E. of R marginal mean =38.5 lb./ac.
S.E. of S marginal mean =33.3 lb./ac.
S.E. of body of table =66.6 lb./ac.

Crop :- Groundnut *(Kharif).* **Ref :- Gj. 58(57).**

Site :- Agri. Res. Stn., Talod. **Type :- 'C'.**

Object :—To find out suitable spacing between rows and seed rate for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) N.A. (ii) (a) Sandy *Goradu.* (b) Refer soil analysis, Talod. (iii) 1.7.1958. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Samrala—1. (viii) Unirrigated. (vii) 3 interculturings and 3 weedings. (ix) 19.19″. (x) 28 to 30.11.1958.

2. TREATMENTS:

Main-plot treatments:
3 row spacings : S_1=18″, S_2=24″ and S_3=30″.

Sub-plot treatments :
3 seed rates : R_1=60, R_2=80 and R_3=100 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 24′×30′ (S_1 and S_2) and 23′×30′ (S_3). (b) 18′×24′. (v) 3′×3′ (S_1 and S_2) and 2.5′×3′ (S_3). (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2294 lb./ac. (ii) (a) 244.3 lb./ac. (b) 228.2 lb./ac. (iii) Main effect of R alone is significant. (iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	2066	2184	2125	2125
R_2	2360	2218	2436	2338
R_3	2386	2453	2419	2419
Mean	2271	2285	2327	2294

S.E. of difference of two

1. S marginal means = 81.5 lb./ac.
2. R marginal means = 76.1 lb./ac.
3. R means at the same level of S =131.8 lb./ac.
4. S means at the same level of R =134.9 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 57(84).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'C'.**

Object :—To find out the optimum time of sowing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 20 lb./ac. of N as A/S. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) 20 lb./ac. of N as A/S+32 lb./ac. of P_2O_5 as Super. (vi) AK—12-24 (bunch type). (vii) Unirrigated. (vii) 3 interculturings and 2 weedings. (ix) 34″. (x) 30.9.1957.

2. TREATMENTS :

5 dates of sowing : D_1=15.6.1957, D_2=22.6.1957, D_3=29.6.1957, D_4=6.7.1957. and D_5=13.7.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 40′×12′. (b) 36′×6′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) *Tikka* attack. (iii) Pod yield. (iv) (a) 1956—1957. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 940 lb./ac. (ii) 166.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of pod in lb./ac.

Treatment	D_1	D_2	D_3	D_4	D_5
Av. yield	1168	1168	933	664	769

S.E./mean =67.9 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(79).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacings on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra*. (b) *Bajra*. (c) 35 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 8.7.1958. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) A.H.—32. (vii) Unirrigated. (viii) N.A. (ix) 28.50″. (x) N.A.

2. TREATMENTS .

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 spacings between plants : S_1=2″ and S_2=4″.

(2) 3 spacings between rows : R_1=18″, R_2=24″ and R_3=36″.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 : P_0=0, P_1=27 and P_2=54 lb./ac.

(2) 2 levels of K_2O : K_0=0 and K_1=27 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 40′×12. (b) 34′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Pod yield. (iv) (a) 1958—1960. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1093 lb./ac. (ii) (a) 518.4 lb./ac. (b) 142.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	K_0	K_1	S_1	S_2	Mean
P_0	1056	1141	1108	1072	1131	1169	1035	1102
P_1	1078	1023	1053	1026	1076	1152	951	1052
P_2	1167	1082	1130	1083	1169	1234	1019	1126
Mean	1100	1082	1097	1060	1125	1185	1502	1093
S_1	1185	1145	1223	1155	1215			
S_2	1015	1018	970	966	1037			
K_0	1044	1050	1088					
K_1	1156	1114	1107					

S.E. of difference of two

1. R marginal means	=122.19 lb./ac.	8. R means at the same level of P	=131.00 lb./ac.
2. S marginal means	= 99.77 lb./ac.	9. K means at the same level of S	= 38.64 lb./ac.
3. P marginal means	= 33.47 lb./ac.	10. K means at the same level of R	= 47.33 lb./ac.
4. K marginal means	= 27.33 lb./ac.	11. S means at the same level of K	=103.40 lb./ac.
5. P means at the same level of S	= 47.33 lb./ac.	12. R means at the same level of K	=126.70 lb./ac.
6. P means at the same level of R	= 57.97 lb./ac.	S.E of body of P×K table	= 35.81 lb./ac.
7. S means at the same level of P	=106.9 lb./ac.	S.E of body of R×S table	=122.20 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 59(65).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacings on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra*. (b) *Bajra*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 1st week of July, 1959. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 2 seeds/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) A.H.—32. (vii) Unirrigated. (viii) N.A. (ix) 45.56″. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(79) on page 357.

4. GENERAL :

(i) and (ii) N.A. (iii) Pod and top yield. (iv) (a) 1958—1960. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 534 lb./ac. (ii) (a) 205.2 lb./ac. (b) 71.32 lb./ac. (iii) Effects P and R are highly significant. Others are not significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	K_0	K_1	S_1	S_2	Mean
P_0	716	413	357	497	493	489	501	495
P_1	734	446	432	556	518	548	527	538
P_2	773	473	467	580	560	556	586	571
Mean	741	444	419	544	524	531	538	534
S_1	729	433	431	535	527			
S_2	753	454	406	554	522			
K_0	747	452	436					
K_1	735	436	402					

S.E. of difference of two

1. R marginal means =48.37 lb./ac.
2. S marginal means =39.49 lb./ac.
3. P marginal means =16.81 lb./ac.
4. K marginal means =13.72 lb./ac.
5. P means at the same level of S =23.77 lb./ac.
6. P means at the same level of R =29.12 lb./ac.
7. S means at the same l evel of P =44.00 lb./ac.
8. R means at the same level of P =53.89 lb./ac.
9. K means at the same level of S =19.42 lb./ac.
10. K means at the same level of R =23.77 lb./ac.
11. S means at the same level of K =41.80 lb./ac.
12. R means at the same level of K =51.20 lb./ac.

S.E. of body of P×K table =16.81 lb./ac.

S.E. of body of R×S table =48.37 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(77).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacings on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) *Bajra*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (ii) 12.7.1958. (iv) (a) 1 ploughing and 4 harrowings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) A.K.—12-24. (vii) Irrigated. (viii) 2 weedings and 2 interculturings. (ix) 13.10". (x) 27.10.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(79) on page 357.
Manures broadcast before sowing.

4. GENERAL :

(i) Unsatisfactory. (ii) *Tikka* disease. (iii) Pod yield. (iv) (a) 1958—contd. (b) N.A. (c) No. (v) (a) Junagadh, Umrala and Amreli. (b) Nil. (vi) and (vii) Nil.

5. RESULT S :

(i) 552 lb./ac. (ii) (a) 139.7 lb./ac, (b) 87.97 lb./ac. (iii) Effects of P and R are highly significant and effect of S is significant. Others are not significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	K_0	K_1	S_1	S_2	Mean
P_0	603	384	517	492	510	537	466	502
P_1	634	510	570	568	574	607	536	572
P_2	672	458	622	599	569	617	551	584
Mean	636	451	570	553	551	587	518	552
S_1	660	463	637	587	586			
S_2	612	438	502	518	517			
K_0	629	439	590					
K_1	643	462	549					

S.E. of difference of two

1. R marginal means =32.93 lb./ac.
2. S marginal means =26.89 lb./ac.
3. P marginal means =20.73 lb./ac.
4. K marginal means =16.93 lb./ac.
5. P means at the same level of S =29.32 lb./ac.
6. P means at the same level of R =35.91 lb./ac.
7. S means at the same level of P =36.00 lb./ac.
8. R means at the same level of P =44.09 lb./ac.
9. K means at the same level of S =23.94 lb./ac.
10. K means at the same level of R =29.32 lb./ac.
11. S means at the same level of K =31.79 lb./ac.
12. R means at the same level of K =38.91 lb./ac.

S.E. of body of P×K table =20.73 lb./ac.
S.E. of body of R×S table =32.93 lb./ac.

Crop :- Groundnut. **Ref :- Gj. 59(68).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacings on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal—Cotton. (b) Cotton. (c) 5 C.L./ac. of compost+25 lb./ac. of manure mixture. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 3.7.1959. (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of compost broadcast. (vi) A.K.—12-24. (vii) Unirrigated. (viii) 3 interculturings and 4 weedings. (ix) 34.32″. (x) 17.10·1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(79) on page 357.

4. GENERAL :

(i) Normal. (ii) Serious attack of *tikka.* Slight attack of grass-hoppers. (iii) Pod and top yield. (iv) (a) 1958—contd. (b) and (c) No. (v) (a) Umrala, Jamnagar and Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1095 lb./ac. (ii) (a) 237.0 lb./ac. (b) 160.5 lb./ac. (iii) Effects of P is significant and effect of R is highly significant. Interaction R×P is significant while all the other effects are not significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	K_0	K_1	S_1	S_2	Maan
P_0	1148	1061	946	1017	1086	1050	1053	1052
P_1	1211	1158	883	1083	1085	1152	1016	1084
P_2	1276	1302	873	1181	1119	1225	1075	1150
Mean	1212	1174	900	1094	1097	1142	1048	1095
S_1	1260	1214	953	1129	1156			
S_2	1163	1133	848	1058	1037			
K_0	1230	1158	893					
K_1	1192	1189	908					

S.E. of difference of two

1. R marginal means =55.86 lb./ac.
2. S marginal means =45.61 lb./ac.
3. P marginal means =37.83 lb./ac.
4. K marginal means =30.89 lb./ac.
5. P means at the same level of S =53.50 lb./ac.
6. P means at the same level of R =65.52 lb./ac.
7. S means at the same level of P =63.15 lb./ac.
8. R means at the same level of P =77.35 lb./ac.
9. K means at the same level of S =43.68 lb./ac.
10. K means at the same level of R =53.50 lb./ac.
11. S means at the same level of K =55.09 lb./ac.
12. R means at the same level of K =67.46 lb./ac.

S.E. of body of R×S table =55.86 lb./ac.
S.E. of body of P×K table =37.83 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(40).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacings on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black and loamy. (b) Refer soil analysis, Junagadh. (iii) 4.7.1958. (iv) (a) 1 harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Punjab—1 (medium). (vii) Unirrigated. (viii) Nil. (ix) 34". (x) 16.11.1958.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)
- (1) 3 levels of P_2O_5 : $P_0=0$, $P_1=27$ and $P_2=54$ lb./ac.
- (2) 2 levels of K_2O : $K_0=0$ and $K_1=27$ lb./ac.
- (3) 2 spacings between plants : $S_1=2''$ and $S_2=4''$.
- (4) 3 spacings between rows : $R_1=18''$, $R_2=24''$ and $R_3=36''$.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 36′. (b) N.A. (iii) 2. (iv) (a) 40′×12′. (b) 36′×6′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of *tikka*. No control measures taken. (iii) Pod yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) Halvad and Umrala. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1289 lb./ac. (ii) 186.9 lb./ac. (iii) Main effect of P is highly significant. No other effect is significant. (iv) Av. yield of pod in lb./ac.

	K_0	K_1	S_1	S_2	R_1	R_2	R_3	Mean
P_0	1180	1140	1171	1149	1232	1131	1117	1160
P_1	1279	1335	1246	1367	1306	1418	1196	1307
P_2	1441	1359	1379	1421	1324	1405	1470	1400
Mean	1300	1278	1265	1312	1287	1318	1261	1289
R_1	1317	1258	1216	1359				
R_2	1342	1294	1311	1325				
R_3	1241	1282	1270	1253				
S_1	1286	1245						
S_2	1314	1311						

S.E. of P or R marginal means =38.15 lb./ac.
S.E. of K or S marginal means =31.15 lb./ac.
S.E. of body of P×R table =66.08 lb /ac.
S.E. of body of P×K or S or R×K or S table =53.95 lb./ac.
S.E. of body of S×K table =44.05 lb./ac.

Crop :- Groundnut ***(Kharif).*** **Ref :- Gj. 59(135).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'CM'.**

Object :—To study the different manurial doses along with spacings on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar.* (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 10.7.1959. (iv) (a) Nil. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 2 plants/dibble. (v) Nil. (vi) Punjab—1 (medium). (vii) Unirrigated. (viii) 1 interculturing and 3 weedings. (ix) 60.42″. (x) 14.11.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=10$ and $N_2=20$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=25$ and $P_2=50$ lb./ac.
(3) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=25$ and $K_2=50$ lb./ac.
(4) 3 spacings : $S_1=18'' \times 2''$, $S_2=24'' \times 4''$ and $S_3=36'' \times 2''$.

Sub-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

3. DESIGN :

(i) $3^4 \times 2$ split-plot confd. (ii) (a) 9 main-plots/block, 9 blocks/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) 36′×24′. (b) 30′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Moderate attack of *tikka.* (iii) Pod yield. (iv) (a) 1958—contd. (modified in 1959). (b) No. (c) Nil. (v) (a) Talod. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 368 lb./ac. (ii) (a) 231.5 lb./ac. (b) 93.42 lb./ac. (iii) Interaction S×F is highly significant and interaction N×F is significant. No other effect is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	K_0	K_1	K_2	S_1	S_2	S_3	F_0	F_1	Mean
P_0	365	431	391	351	479	356	428	418	341	400	393	396
P_1	348	332	404	360	311	412	330	440	313	342	381	361
P_2	346	372	319	296	362	379	369	352	315	342	350	346
Mean	353	378	371	336	384	382	376	404	323	361	374	368
F_0	359	346	379	333	381	369	346	383	354			
F_1	348	411	364	339	388	396	406	425	293			
S_1	399	363	365	368	389	371						
S_2	391	427	392	387	392	430						
S_3	268	343	358	252	371	346						
K_0	352	325	331									
K_1	347	419	386									
K_2	360	390	397									

S.E. of difference of two

1. P, K, N or S marginal means =44.55 lb./ac.
2. F marginal means =14.66 lb./ac.
3. F means at the same level of P, K, N or S =25.43 lb./ac.
4. P, K, N or S means at the same level of F =48.04 lb./ac.

S.E. of body of P×N, P×K or P×S table =54.57 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 59(83).**

Site :- Agri. Res. Stn., Talod. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacing on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mug*, *Bajra* and *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Sandy. (b) Refer soil analysis, Talod. (iii) 1.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 60 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Samrala—1 (late). (vii) Unirrigated. (viii) 4 interculturings and 3 weedings. (ix) 53.68″. (x) 8 to 11.11.1959.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=10$ and $N_2=20$ lb./ac.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=25$ and $P_2=50$ lb./ac.
(3) 3 levels of K_2O as Pot. Sul.: $K_0=0$, $K_1=25$ and $K_2=50$ lb./ac.
(4) 3 spacings between rows : $S_1=18''$, $S_2=24''$ and $S_3=30''$.

Sub-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=5000$ lb./ac.

3. DESIGN :

(i) $3^4\times2$ split-plot confounded. (ii) (a) 9 main-plots/block, 9 blocks/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 1. (iv) (a) $36'\times21'$ (S_1 and S_2) and $35'\times21'$ (S_3). (b) $30'\times15'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) No. (ii) Attack of collar-rot and white-ant. (iii) Pod and top yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 936 lb./ac. (ii) (a) 277.8 lb./ac. (b) 143.8 lb./ac. (iii) Main effect of K is highly significant while effect of S is significant. No other effect is significant. (iv) Av. yield of pod in lb./ac.

	N_0	N_1	N_2	K_0	K_1	K_2	S_1	S_2	S_3	F_0	F_1	Mean
P_0	893	874	899	652	1026	988	729	863	1074	866	912	889
P_1	981	922	948	797	1038	1016	870	1015	967	937	964	950
P_2	977	944	984	811	1089	1005	937	1010	958	972	965	968
Mean	950	913	944	753	1051	1003	845	963	999	925	947	936
F_0	926	878	934	743	1061	970	861	947	965			
F_1	939	948	954	764	1041	1037	829	978	1034			
S_1	789	859	887	657	938	940						
S_2	1046	926	916	799	1047	1042						
S_3	1016	954	1028	804	1167	1028						
K_0	725	811	725									
K_1	1084	1019	1050									
K_2	1043	910	1057									

S.E. of difference of two

1. P, K, N or S marginal means	=53.46 lb./ac.
2. F marginal means	=22.60 lb./ac.
3. F means at the same level of P, K, N or S	=39.13 lb./ac.
4. P, K, N or S means at the same level of F	=60.20 lb./ac.
S.E. of body of P×N, P×K or P×S table	=65.48 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 56(110).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To study the effect of K_2O along with dates of sowing on Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) As per treatments. (iv) (a) Nil. (b) Drilling. (c) 60 lb./ac. (d) 3′ between rows. (e) —. (v) 20 lb./ac. of N as A/S+32 lb./ac. of P_2O_5 as Super at the time of sowing. (vi) A.K.—12-24. (vii) Irrigated. (viii) 2 interculturings and 2 weedings. (ix) N.A. (x) 25.10.1956.

2. TREATMENTS :

Main-plot treatments :

5 dates of sowing : D_1=15.6.1956, D_2=22.6.1956, D_3=29.6.1956, D_4=6.7.1956 and D_5=13.7.1956.

Sub-plot treatments :

2 levels of K_2O as Pot. Sul. applied on 9.8.1956 : K_0=0 and K_1=20 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 20′×12′. (b) 16′×18′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of aphids ; nicotine sulphate was sprayed. (iii) Pod and top yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 849 lb./ac. (ii) (a) 264.6 lb./ac. (b) 149.9 lb./ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of pod in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
K_0	1035	814	1046	766	411	814
K_1	976	786	1149	1035	468	883
Mean	1006	800	1098	900	440	849

S.E. of difference of two

1. D marginal means =108.00 lb./ac.
2. K marginal means = 38.70 lb./ac.
3. K means at the same level of D = 86.55 lb./ac.
4. D means at the same level of K =122.30 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(93).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacings on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 15.7.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) A.K.—12-24. (vii) Unirrigated. (viii) 2 weedings and 1 interculturing. (ix) N.A. (x) 30.10.1958.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : R_1=18″ R_2=24″ and R_3=36″.

Sub-plot treatments :

2 spacings between plants : S_1=2″ and S_2=4″.

Sub-sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 as Super : P_0=0, P_1=27 and P_2=54 lb./ac.

(2) 2 levels of K_2O as Pot. Sul. : K_0=0 and K_1=27 lb./ac.

P_2O_5 and K_2O applied in furrows at sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot ; 6 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 40′×12′. (b) 34′×6′. (v) 3′×3′. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Attack of aphids but washed away by heavy rains on 26th and 27th August 1958. (iii) Pod yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1365 lb./ac. (ii) (a) 848.8 lb./ac. (b) 431.5. lb./ac. (c) 141.2 lb./ac. (iii) Main effect of S is highly significant. Effect of R is significant. Other effects are not significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	K_0	K_1	S_1	S_2	Mean
P_0	1500	1048	1040	1121	1271	1192	1200	1196
P_1	1858	1186	1164	1318	1486	1478	1328	1403
P_2	1879	1330	1278	1361	1630	1553	1438	1496
Mean	1745	1188	1161	1267	1462	1408	1322	1365
S_1	1879	1153	1190	1303	1512			
S_2	1611	1223	1132	1231	1413			
K_0	1621	1093	1087					
K_1	1870	1283	1235					

S.E. of difference of two

1. R marginal means =200.01 lb./ac. 9. P means at the same level of S = 47.07 lb./ac.
2. S marginal means = 83.04 lb./ac. 10. S means at the same level of R = 91.50 lb./ac.
3. P marginal means = 33.28 lb./ac. 11. P means at the same level of R = 57.64 lb./ac.
4. K marginal means = 27.17 lb./ac. 12. R means at the same level of P =205.50 lb./ac.
5. K means at the same level of S = 38.42 lb./ac. 13. S means at the same level of R =143.80 lb./ac.
6. K means at the same level of K = 87.37 lb./ac. 14. R means at the same level of S =224.40 lb./ac.
7. S means at the same level of R = 47.07 lb./ac. S.E. of body of P×K table = 33.3 lb./ac.
8. R means at the same level of K =202.08 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 59(102).**

Site :- Agri. Res. Stn., Umrala. **Type :- 'CM'.**

Object :—To study the effect of different manurial doses along with spacing on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Umrala. (iii) 5.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 80 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) AK—12-24. (vii) Unirrigated. (viii) Nil. (ix) 25.98″. (x) 4.11.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(93) on page 364.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Pod yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 340 lb./ac. (ii) (a) 505.4 lb./ac. (b) 120.2 lb./ac. (c) 76.66 lb./ac. (iii) Interaction S×P alone is highly significant. (iv) Av. yield of pod in lb./ac.

	R_1	R_2	R_3	K_0	K_1	S_1	S_2	Mean
P_0	292	384	289	308	336	324	319	322
P_1	360	402	302	339	370	369	340	354
P_2	338	362	332	332	358	303	386	344
Mean	330	383	308	326	355	332	348	340
S_0	315	371	311	325	340			
S_1	345	395	305	327	369			
K_0	331	363	283					
K_1	329	402	333					

S.E. difference of two

1. R marginal means =119.10 lb./ac.
2. S marginal means = 23.13 lb./ac.
3. P marginal means = 18.07 lb./ac.
4. K marginal means = 14.75 lb./ac.
5. K means at the same level of S = 20.86 lb./ac.
6. S means at the same level of K = 27.45 lb./ac.
7. K means at the same level of R = 25.55 lb./ac.
8. R means at the same level of K =120.40 lb./ac.
9. P means at the same level of S = 25.55 lb./ac.
10. S means at the same level of R = 31.15 lb./ac.
11. P means at the same level of P = 31.30 lb./ac.
12. R means at the same level of P =121.90 lb./ac.
13. S means at the same level of R = 40.07 lb./ac.
14. R means at the same level of S =122.40 lb./ac.

S.E. of body of P×K table = 18.07 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 54(39).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'I'.**

Object :—To find out the number of irrigations required in this tract to get better yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 8.7.1954. (iv) (a) 2 harrowings and 2 interculturings. (b) N.A. (c) 40 lb./ac. (d) and (e) N.A. (v) 8 lb./ac. of P_2O_5 at the time of sowing and 20 lb./ac. of N in the form of manure mixture+A/S top dressed 3 weeks after sowing. (vi) A.H.—32 (early). (vii) As per treatments. (viii) 3 interculturings, 3 weedings and harrowing. (ix) 20″. (x) 25.10.1954.

2. TREATMENTS :

1. No irrigation.
2. One irrigation.
3. Two irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 51′×18′. (b) 45′×12′. (v) Two rows length wise and 3′ distance breadth wise. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Average height, width of plants in inches and pod yield. (iv) (a) 1954—N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 626.7 lb./ac. (ii) 71.79 lb./ac. (iii) Treatment differences are not significant, (iv) Av. yield of pod in lb./ac.

Treatment	1	2	3
Av. yield	655.6	583.4	649.2

S.E./mean =29.04 lb./ac

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 58(101).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'DM'.**

Object :—To study the effect of sulphur dusting on the control of tikka disease of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 9.7.1958. (iv) (a) 1 harrowing. (b) Drilling. (c) 60 lb./ac. (d) 18″ between rows. (e) —. (v) 5 C.L./ac. of F.Y.M (vi) A.H.—32. (vii) Unirrigated. (viii) 2 interculturings. (ix) 28.76″. (x) 20.10.1958.

2. TREATMENTS:

1. Control.
2. 3 dustings of 15 lb./ac. of sulphur, 1, 1½ and 2 months after sowing.

3. DESIGN:

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 33′×18′. (b) 30′×15′. (v) 1.5′×1.5′. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1512 lb./ac. (ii) 67.43 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of pod in lb./ac.

Treatment	1	2
Av. yield	1420	1604

S.E./mean =19.47 lb./ac.

Crop :- Groundnut *(Kharif)*. **Ref :- Gj. 59(90).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'DM'.**

Object :—To study the effect of sulphur dusting to control tikka disease of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Shallow, light black. (b) Refer soil analysis, Amreli. (iii) 3.7.1959. (iv) (a) 4 harrowings. (b) Drilling. (c) 60 lb./ac. (d) 18″ between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) A.H.—32. (vii) Unirrigated. (viii) 3-4 interculturings and 2 weedings. (ix) 45.56″. (x) 23.10.1959.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no 58(101) above.

4. GENERAL:

(i) Due to heavy rains, there was more of vegetative growth than pod yields. (ii) Nil. (iii) Pod yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Excessive rain in October. (vii) Nil.

5. RESULTS :

(i) 1625 lb./ac. (ii) 81.66 lb./ac. (iii) Treatment difference is highly significant. (iv) Av yield of pod in lb./ac.

Treatment	1	2
Av. yield	1521	1730

S.E./mean =23.57 lb./ac.

Crop :- Lang *(Rabi)*. **Ref :- Gj. 54(20).**

Site :- Agri. Res. Stn., Bhuwa **Type :- 'M'.**

Object :—To study the effect of leguminous crop Lang with and without P_2O_5 on succeeding cereal crop Jowar.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 15.10.1954. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 2′ between rows; between plants-irregular. (e) N.A. (v) Nil. (vi) Lang. (vii) Unirrigated. (viii) 1 weeding. (ix) 29.31″. (x) 19.1.1955.

2. TREATMENTS :

1. 0 lb./ac. of P_2O_5 as Super.
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow.

Time and method of application—N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48′×24′. (b) 44′×20′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 719 lb./ac. (ii) 82.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	741	707	685	742

S.E./mean =36.89 lb./ac.

Crop :- Garlic ***(Rabi).*** **Ref :- Gj. 55(102).**

Site :- Agri. Res. Stn., Jamnagar. **Type :- 'M'.**

Object :—To determine the optimum requirement of N, P and K for Garlic.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 10.11.1955. (iv) (a) N.A. (b) Dibbling. (c) 300 lb./ac. (d) 9″ between rows. (e) N.A. (v) Sann as G.M. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 12.29″. (x) 10.4.1956.

2. TREATMENTS :

8 manurial treatments : M_0=Control (no manure), M_1=20 lb./ac. of N+32 lb./ac. of P_2O_5, M_2=20 lb./ac. of N+32 lb./ac. of P_2O_5+44 lb./ac. of K_2O, M_3=30 lb./ac. of N+32 lb./ac. of P_2O_5+22 lb./ac. of K_2O, M_4=30 lb./ac of N+32 lb./ac. of P_2O_5+44 lb./ac. of K_2O, M_5=20 lb./ac. of N+32 lb./ac. of P_2O_5+22 lb./ac. of K_2O, M_6=20 lb./ac. of N+22 lb./ac. of K_2O and M_7=20 lb./ac. of N+44 lb./ac. of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Garlic yield. (iv) (a) and (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Plot wise yield—N.A.

5. RESULTS:

(i) N.A. (ii) N.A. (iii) Treatment differences are significant. (iv) Av. yield of garlic in lb./ac.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7
Av. yield	N.A.	2061	1750	1827	2061	1380	2020	2021

S.E./mean =N.A.

Crop :- Garlic *(Rabi)*. **Ref :- Gj. 55(103).**

Site :- Agri. Res. Stn., Jamnagar. Type :- 'C'.

Object :—To find out optimum spacing for Garlic.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 10.11.1955. (iv) (a) N.A. (b) Dibbling. (c) 600 lb./ac. (d) As per treatments. (e) —. (v) Sann as G.M. (vi) Nil. (vii) Irrigated. (viii) Nil. (ix) 12.29″. (x) 2.3.1956.

2. TREATMENTS :

4 spacings betwen rows : S_1=3″, S_2=4½″; S_3=6″, S_4=9″ and S_5=Cross-wise sowing with 18″ seed drill (local method).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Garlic yield. (iv) (a) and (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Plot-wise yield—N.A.

5. RESULTS :

(i) 2987 lb./ac. (ii) N.A. (iii) Treatment differences are highly significant. (iv) Av. yield of garlic in lb./ac.

Treatment	S_1	S_2	S_3	S_4	S_5
Av. yield	2962	3538	3151	2651	2632

S.E./mean =N.A.

Crop :- Tobacco *(Kharif)*. **Ref :- Gj. 57(128).**

Site :- Instt. of Agriculture, Anand. Type :- 'M'.

Object :—To find out suitable dose of N for Bidi-Tobacco when field is green manured with and without P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Black soil. (b) Refer soil analysis, Anand. (iii) 31.8.1957. (iv) (a) 4 ploughings and 3 harrowings. (b) Transplanting. (c) —. (d) 3′×3′. (e) N.A. (v) Nil. (vi) Keliu—49. (vii) Irrigated. (viii) 4 interculturings and 2 weedings. (ix) 21.00″. (x) 19.1.1958.

2. TREATMENTS :

Main-plot treatments :

2 level of P_2O_5 as Super : P_0=0 and P_1=30 lb./ac. of P_2O_5.

Sub-plot treatments :

3 levels of N as G.N.C. : N_1=80, N_2=120 and N_3=160 lb./ac.

Sann as G.M. applied in main-plots.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 48′×45′. (b) 36′×33′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Cured tobacco yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Plot-wise yield data—N.A.

5. RESULTS :

(i) 1341 lb./ac. (ii) (a) N.A. (b) N.A. (iii) Only N effect is significant. (iv) Av. yield of cured tobacco in lb./ac.

	N_1	N_2	N_3	Mean
P_0	1340	1247	1392	1326
P_1	1341	1276	1447	1355
Mean	1341	1262	1419	1341

S.E's =N.A.

Crop :- Tobacco ***(Kharif).*** **Ref :- Gj. 58(119).**

Site :- Inst. of Agriculture, Anand. **Type :- 'M'.**

Object :—To find out suitable dose of N for Bidi-Tobacco when the field is green manured with and without P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) (a) Black soil. (b) Refer soil analysis, Anand. (iii) 1.9.1958. (iv) (a) 3 ploughings and 4 harrowings. (b) Transplanting. (c) —. (d) 3′×3′. (e) N.A. (v) Nil. (vi) Keliu—49. (vii) Irrigated. (viii) 3 interculturings and 3 weedings. (ix) 37.52″. (x) 19.1.1959.

2. TREATMENTS :

Same as in expt. no. 57(128) on page 369.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 48′×45′. (b) 36′×33′. (v) 6′×6′. (vi) No.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Cured tobacco yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Plot-wise yield data N.A.

5. RESULTS :

(i) 1351 lb./ac. (ii) (a) N.A. (b) N.A. (iii) Only N effect is significant. (iv) Av. yield of cured tobacco in lb./ac.

	N_0	N_1	N_2	Mean
P_0	1241	1301	1512	1351
P_1	1179	1335	1545	1353
Mean	1210	1318	1529	1352

S.E's =N.A.

Crop :- Tobacco ***(Kharif).*** **Ref :- Gj. 59(138).**

Site :- Inst. of Agriculture, Anand. **Type :- 'M'.**

Object :—To find out suitable dose of N for Bidi-Tobbacco when the field is green manured with and without P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra.* (c) N.A. (ii) (a) Black. (b) Refer soil analysis, Anand. (iii) 30.8.1959. (iv) (a) 3 ploughings and 3 harrowings. (b) Transplanting. (c) N.A. (d) 3′×3′. (e) N.A. (v) Nil. (vi) Keliu—49. (vii) Irrigated. (viii) 4 interculturings and 2 weedings. (ix) 51.10″. (x) 4.1.1960.

2. TREATMENTS :

Same as in expt. no. 57(128) on page 369.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 48′×45′. (b) 36′×33′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Cured tobacco yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Plot wise yield data N.A.

5. RESULTS :

(i) 993 lb./ac. (ii) (a) and (b) N.A. (iii) Only N effect is significant. (iv) Av. yield of cured tobacco in lb./ac.

	N_1	N_2	N_3	Mean
P_0	730	1024	1147	867
P_1	849	1036	1173	1019
Mean	790	1030	1160	993

S.E.'s =N.A.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 56(38).**

Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the suitable dose of sulphur for Jowar fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Salty. (b) Refer soil analysis, Harij. (iii) 27.9.1956. (iv) 2 harrowings and 1 ploughing. (b) Drilling. (c) 50 lb./ac. (d) 12″×1″. (e) N.A. (v) Nil. (vi) Sundia (fodder) (vii) Unirrigated. (viii) Nil. (ix) 36.82″. (x) 17.11.1956.

2. TREATMENTS :

1. Control.
2. ¼ ton/ac. of Sulphur.
3. ½ ton/ac. of Sulphur.

Time and method N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 33′×16½′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor due to heavy and continuous rains. (ii) Nil. (iii) Fodder yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Expt. was not conducted in 1955. (vii) Nil.

5. RESULTS :

(i) 798 lb./ac. (ii) 70.24 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of fodder in lb./ac.

Treatment	1	2	3
Av. yield	914	757	723

S.E./mean =35.12 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(32).**

Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the suitable dose of sulphur for Jowar fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar.* (c) Nil. (ii) (a) Salty. (b) Refer soil analysis, Harij. (iii) 28.8.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) 50 lb./ac. (d) 12″×1″. (e) N.A. (v) Nil. (vi) S—1049 (fodder). (vii) Unirrigated. (viii) 1 hand weeding. (ix) 13.77″. (x) 25.10.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(38) on page 371.
Sulphur spread on 28.8.1958.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1996 lb./ac. (ii) 291 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in lb./ac.

Treatment	A	B	C
Av. yield	2301	1741	1945

S.E./mean =145.5 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 56(39).**
Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the suitable dose of gypsum for Jowar fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Salty. (b) Refer soil analysis, Harij. (iii) 27.9.1956. (iv) (a) 2 ploughings and 1 harrowing. (b) Drilling. (c) 50 lb./ac. (d) 12″×1″. (e) N.A. (v) Nil. (vi) Sundia (fodder). (vii) Unirrigated. (viii) Nil. (ix) 36.82″. (x) 17.11.1956.

2. TREATMENTS :

A. Control.
B. ½ ton/ac. of Gypsum.
C. 1 ton/ac. of Gypsum.
Time and method—N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 33′×16½′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor due to heavy and continuous rains. (ii) Nil. (iii) Fodder yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Expt. was not conducted in 1955. (vii) Nil.

5. RESULTS :

(i) 1079 lb./ac. (ii) 171 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in lb./ac.

Treatment	A	B	C
Av. yield	1140	1050	1046

S.E./mean =85.5 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(33).**
Site :- Agri. Res. Stn., Harij. **Type :- 'M'.**

Object :—To determine the suitable dose of gypsum for Jowar fodder.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Jowar.* (c) Nil. (ii) (a) Salty. (b) Refer soil analysis, Harij. (iii) 28.8.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) 50 lb./ac. (d) 12″×1″. (e) N.A. (v) Nil. (vi) S—1049 (fodder). (vii) Unirrigated. (viii) 1 hand weeding. (ix) 13.77″. (x) 25.10.1958.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) F.Y.M. at 10 C.L./ac., and 30 lb./ac. of N as A/S in 3 doses 4 : 2 : 1. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 6.11.1957. (iv) (a) 2 ploughings and 1 harrowing before sowing. (b) Drilling. (c) 20 lb./ac. (d) Between rows 9″. (e) N.A. (v) 20 C.L./ac. of F.Y.M. broadcast before sowing. (vi) Local. (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 28, 29.1.1958 ; 25, 26.2.1958 ; 19, 20.3.1958; 7, 8, 29, 30.4.1958.

2. TREATMENTS :

1. 4 levels of N as A/S : $N_0=0$, $N_1=25$, $N_2=50$ and $N_3=75$ lb./ac.
2. 5 levels of P_2O_5 as Super : $P_0=0$, $P_1=25$, $P_2=50$, $P_3=75$ and $P_4=100$ lb./ac.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 3. (iv) (a) 25′×15′. (b) 20′×12′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) Very good. (ii) Aphids were observed. Nicotine sulphate sprayed on 2.1.1958 and Endrine sprayed on 2.5.1958. (iii) Green fodder yield. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 52472 lb./ac. (ii) 2957 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of green fodder in lb./ac.

	P_0	P_1	P_2	P_3	P_4	Mean
N_0	49370	48765	49616	54634	55955	51668
N_1	49907	49795	53110	55104	56134	52810
N_2	48451	54141	52685	54813	55485	53115
N_3	53245	51005	50579	52259	54387	52295
Mean	50243	50926	51498	54202	55490	52472

S.E. of P marginal mean =851.2 lb./ac.
S.E. of N marginal mean =761.6 lb./ac.
S.E. of body of table =170.2 lb./ac.

Crop :- Lucerne *(Rabi)*. **Ref :- Gj. 57(51).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To study the effect of different spacings on green fodder yield of Lucerne.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Basal dose of F.Y.M. at 10 C.L./ac. and 30 lb./ac. of N as A/S in 3 doses. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 7.11.1957. (iv) (a) 2 ploughings and 1 harrowing. (b) Drilling. (c) 20 lb./ac. (d) As per treatments. (e) N.A. (v) 20 lb./ac. of F.Y.M. broadcast before sowing and 50 lb./ac. of P_2O_5 as Super placed deep in the furrows before sowing. (vi) Local. (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 16, 17.1.1958; 18, 20.2.1958 ; 14, 15.3.1958 ; 3, 25, 26.4.1958.

2. TREATMENTS :

6 spacings between rows : $S_1=6''$, $S_2=9''$, $S_3=12''$, $S_4=15''$, $S_5=18''$ and $S_6=$ broadcast.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 25′×90′. (iii) 4. (iv) (a) 25′×15′. (b) 20′×12′. (v) 2½′×1½′ (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphids were observed. Nicotine sulphate sprayed on 2.1.1958 and Endrine sprayed on 26.4.1958. (iii) Av. height and yield. (iv) (a) 1957—contd. (b) No. (c) N.A. (v) (a) and (b) N A. (vi) and (vii) Nil.

	N_0	N_1	N_2	N_3	Mean
P_0	13431	13391	11939	12544	12826
P_1	17343	23192	24966	23877	22344
P_2	21054	27386	27669	27588	25924
P_3	27064	29524	31500	32468	30139
Mean	19723	23373	24018	24119	22808

S.E. of difference of two

1. N marginal means =2591 lb./ac.
2. S marginal means =1256 lb./ac.
3. S means at the same level of N =2511 lb./ac.
4. N means at the same level of S =3383 lb./ac.

Crop :- Lucerne *(Rabi)*. **Ref :- Gj. 56(43).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To study the response of Lucerne to different levels of P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 5.11.1956. (iv) (a) 3 ploughings and 3 harrowings. (b) Drilling. (c) 20 lb./ac. (d) Between rows : 9" ; between plants : irregular. (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) 1 weeding and 3 interculturings. (ix) Nil. (x) 4.2.1957, 14.3.1957, 10.4.1957 and 2.5.1957.

2. TREATMENTS :

1. Control.
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Wheat was grown with 20 lb./ac. of N as A/S.

P_2O_5 was drilled at the time of sowing and N was top dressed on 17.12.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 35'×16'. (b) 30'×12'. (v) 2½'×2'. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Weight at each cutting, green fodder yield. In case of wheat, number of ear heads per plot. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Treatment 5 was not included in the analysis as it concerns wheat crop. (vii) Nil.

5. RESULTS :

(i) 21778 lb./ac. (ii) 1059 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in lb./ac.

Treatment	1	2	3	4
Av. yield	10602	21145	26053	29312

S.E./mean =529.6 lb./ac.

Crop :- Lucerne *(Rabi)*. **Ref :- Gj. 57(50).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'M'.**

Object :—To study the response of Lucerne to different levels of N and P_2O_5.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S+G.N.C. (in 1 : 1 ratio) applied before sowing : $N_0=0$, $N_1=50$, $N_2=100$ and $N_3=200$ lb./ac.

Sub-plot treatments :

4 levels of P_2O_5 as Super applied before sowing : $P_0=0$, $P_1=50$, $P_2=100$ and $P_3=150$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 51′×10′. (b) 47′×8′. (v) 2′×1′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of aphids and cater pillers. (iii) Green fodder yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 12923 lb./ac. (ii) (a) 1523 lb./ac. (b) 1483 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of green fodder in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	3881	4634	4228	4665	4352
P_1	8515	9760	11180	11151	10152
P_2	14858	16538	18275	18565	17059
P_3	16798	19868	21635	22214	20129
Mean	11013	12700	13829	14148	12923

S.E. of difference of two

1. N marginal means =538.5 lb./ac.
2. S marginal means =524.2 lb./ac.
3. S means at the same level of N =1049 lb./ac.
4. N means at the same level of S =1056 lb./ac.

Crop :- Lucerne *(Rabi)*.　　**Ref :- Gj. 56(23).**

Site :- Agri. Res. Stn., Halvad.　　**Type :- 'M'.**

Object :—To study the response of Lucerne to different levels of N and P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann and wheat. (c) 200 lb./ac. of A/S for sann and 200 lb./ac. of A/S+200 lb./ac. of Super for wheat. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 6.11.1956. (iv) (a) 2 harrowings. (b) Broadcasting. (c) 20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Nil. (ix) 33.75″. (x) Green fodder was cut as and when ready.

2. TREATMENTS :

Same as in expt. no. 55(25) on page 377.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 40′×13′. (b) 36′×10′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Green fodder yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 22808 lb./ac. (ii) (a) 6348 lb./ac. (b) 3076 lb./ac. (iii) Only main effect of P is highly significant. (iv) Av. yield of green fodder in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	3137	3642	3490	4037	3576
S_2	2220	2955	3081	3031	2822
S_3	2954	3462	3902	4088	3601
Mean	2770	3353	3491	3718	3333

S.E. of difference of two

1. S marginal means =283.3 lb./ac.
2. R marginal means =223.2 lb./ac.
3. R means at the same level of S =386.7 lb./ac.
4. S means at the same level of R =454.7 lb./ac.

Crop :- Lucerne *(Rabi)*. **Ref :- Gj. 54(38).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the response of Lucerne to different levels of P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 1.1.1954. (iv) (a) One ploughing and 1 harrowing. (b) Broadcasting. (c) 20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) and (ix) Nil. (x) 15.12.1954 to 29.4.1955.

2. TREATMENTS :

1. Control.
2. 50 lb./ac. of P_2O_5.
3. 100 lb./ac. of P_2O_5
4. 150 lb./ac. of P_2O_5

P_2O_5 applied as Super and drilled before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 60′×18′. (b) 54′×12′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Green fodder yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) As treatment 1 gives very low yield (309 lb./ac.), it is excluded from statistical analysis. (vii) Nil.

5. RESULTS :

(i) 19741 lb./ac. (ii) 1188 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of green fodder in lb./ac.

Treatment	2	3	4
Av. yield	14856	19414	24953

S.E./mean =751.3 lb./ac.

Crop :- Lucerne *(Rabi)*. **Ref :- Gj. 55(25).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'M'.**

Object :—To study the response of lucerne to different levels of N and P_2O_5.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 28.10.1955. (iv) (a) 2 harrowings. (b) Broadcasting. (c) 20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Nil. (ix) 13.75″. (x) N.A.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 56(18).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To study the effect of spacings and seed rates on Jowar fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar*. (c) Nil. (ii) (a) Coarse sandy loam. (b) Refer soil analysis, Deesa. (iii) 7.9.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Malvan (local). (vii) Unirrigated. (viii) 1 interculturing. (ix) 35.39". (x) 9 to 13.12.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(19) on page 375.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3943 lb./ac. (ii) (a) 1213 lb./ac. (b) 816.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	3646	4179	3436	3243	3626
S_2	4404	3920	3953	4275	4138
S_3	4420	3775	4082	3985	4066
Mean	4157	3958	3824	3834	3943

S.E. of difference of two

1. S marginal means =350.1 lb./ac.
2. R marginal means =272.2 lb./ac.
3. R means at the same level of S =471.5 lb./ac.
4. S means at the same level of R =537.8 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 58(10).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To study the effect of spacing and seed rate on Jowar fodder.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) (a) Yellowish brown. (b) Refer soil analysis, Deesa. (iii) 28 and 29.8.1958. (iv) (a) Two ploughings and 1 harrowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 20 lb./ac. of N as A/S. (vi) Malvan (local). (vii) Unirrigated. (viii) Two interculturings. (ix) 13.9". (x) 17 to 19.11.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(19) on page 375.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1955—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3333 lb./ac. (ii) (a) 981.6 lb./ac. (b) 669.9 lb./ac. (iii) Main effects of S and R are significant. (iv) Av. yield of fodder in lb./ac.

	S_1	S_2	S_3	Mean
R_1	6090	5401	5885	5792
R_2	5739	6381	5465	5862
R_3	5998	5719	6231	5983
Mean	5942	5834	5860	5879

S.E. of difference of two

1. S marginal means =282.8 lb./ac.
2. R marginal means =523.3 lb./ac.
3. R means as the same level of S =906.5 lb./ac.
4. S means as the same level of R =792.3 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 55(19).**

Site :- Agri. Res. Stn., Deesa. **Type :- 'C'.**

Object :—To study the effect of spacings and seed rates on Jowar fodder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Coarse sandy loam. (b) Refer soil analysis, Deesa. (iii) 12 and 13.9.1955. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Malvan (local). (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 15.65″. (x) 9 and 10.12.1955.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : $S_1=9''$, $S_2=12''$ and $S_3=15''$.

Sub-plot treatments :

4 seed rates : $R_1=20$, $R_2=40$, $R_3=60$ and $R_4=80$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 36′×18′ (S_1), 36′×19′ (S_2) and 36′×20′ (S_3). (b) 30′×15′. (v) 3′ at the ends and 2 rows on either side. (vi) Yes.

4. GENERAL :

(i) Poor due to drought conditions. (ii) Nil. (iii) Fodder yield. (iv) (a) 1955—N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) Season was abnormal. (vii) Nil.

5. RESULTS :

(i) 529 lb./ac. (ii) (a) 287.7 lb./ac. (b) 205.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	432	509	542	528	503
S_2	468	591	583	557	550
S_3	420	615	526	571	533
Mean	440	572	550	552	529

S.E. of difference of two

1. S marginal means = 83.06 lb./ac.
2. R marginal means = 68.62 lb./ac.
3. R means at the same level of S =118.90 lb./ac.
4. S means at the same level of R =132.30 lb./ac.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) 1920 lb./ac. of GNC+480 lb./ac. of castor cake. (ii) (a) Black. (b) Refer soil analysis, Anand. (iii) 14.9.1955. (iv) (a) 1 plouhing and 4 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Sundia*—1049. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 8.12.1955.

2. TREATMENTS :

Main-plot treatments :
3 spacings between rows : $S_1=9''$, $S_2=12''$ and $S_3=15''$.
Sub-plot treatments :
3 seed rates : $R_1=40$, $R_2=60$ and $R_3=80$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) $18'\times36'$ (S_1), $19'\times36'$ (S_2) and $20'\times36'$ (S_3). (b) $15'\times30'$. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Dry fodder yield. (iv) (a) 1955—1956. (b) Nil. (c) N.A. (v) (a) and (b) N.A. (vi) and (vi) Nil.

5. RESULTS :

(i) 5010 lb./ac. (ii) (a) 1045 lb./ac. (b) 664.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in lb./ac.

	S_1	S_2	S_3	Mean
R_1	4727	5082	5663	5157
R_2	4985	4743	5243	4990
R_3	4711	5034	4904	4883
Mean	4807	4953	5270	5010

S.E. of difference of two

1. S marginal means =348.3 lb./ac.
2. R marginal means =221.5 lb./ac.
3. R means at the same level of S =383.7 lb./ac.
4. S means at the same level of R =468.5 lb./ac.

Crop :- Jowar. **Ref :- Gj. 59(90).**

Site :- Inst. of Agriculture, Anand. **Type :- 'C'.**

Object :—To study the effect of spacings and seed rates on Jowar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 10 C.L./ac. of F.Y.M.+216 lb./ac. of G.N.C.+18 lb./ac. of A/S+172 lb./ac. of Super+68 lb./ac. of Pot. Sul. (ii) (a) Black. (b) Refer soil analysis, Anand. (iii) 3.9.1956. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Sundia—1049. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(94) above.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fodder yield. (iv) (a) 1955—1956. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 5879 lb./ac. (ii) (a) 848.4 lb./ac. (b) 1570 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of fodder in lb./ac.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(39) on page 372.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1951—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1803 lb./ac. (ii) 369.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in lb./ac.

Treatment	A	B	C
Av. yield	1920	1605	1885

S.E./mean =184.8 lb./ac.

Crop :- Jowar *(Kharif)*. **Ref :- Gj. 54(74).**

Site :- Agri. Res. Stn., Viramgam. **Type :- 'M'.**

Object :—To find the best source of N for Jowar fodder.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Alluvial and medium black. (b) Refer soil analysis, Viramgam. (iii) 9.7.1954. (iv) (a) 3 harrowings. (b) Drilling. (c) 30 lb./ac. (d) Between rows—18″ ; between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) C—10-2 (fodder). (vii) Unirrigated. (viii) 1 interculturing. (ix) 27.32″. (x) 18.10.1954.

2. TREATMENTS :

A. Control.
B. 60 lb./ac. of N as A/S
C. 60 lb./ac. of N as A/S and G.N.C. (1 : 1).
D. 60 lb./ac. of N as calcium cyanamide.
E. 60 lb./ac. of N as G.N.C. and calcium cyanamide (1 : 1).
N broadcast one month after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 80′×18′. (b) 72′×12′. (v) 2 rows on either side and 4′ at each end of the net plot. (vi) Yes.

4. GENERAL :

(i) Poor due to continuous and heavy rains. (ii) Light attack of red leaf blight and stigma. (iii) Fodder yield. (iv) (a) 1953—1954. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 4336 lb./ac. (ii) 585.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in lb./ac.

Treatment	A	B	C	D	E
Av. yield	3378	5117	4865	4159	4159

S.E /mean =292.7 lb./ac.

Crop :- Jowar. **Ref :- Gj. 55(94).**

Site :- Inst. of Agriculture, Anand. **Type :- 'C'.**

Object :—To study the effect of spacing and seed rate on Jowar fodder.

5. RESULTS :

(i) 57369 lb./ac. (ii) 1886 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of green fodder in lb./ac.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	59214	58670	57626	55448	54450	58806

S.E./mean = 942.9 lb./ac.

Crop :- Lucerne *(Rabi)*. **Ref :- Gj. 58(125).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'C'.**

Object :—To study the effect of different spacings on green fodder yield of Lucerne.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Black. (b) Refer soil analysis, Junagadh. (iii) 15.11.1958. (iv) (a) 2 ploughings and 1 harrowing. (b) Drilling and broadcasting. (c) 21 lb./ac. (d) As per treatments. (e) —. (v) 5 lb./ac. of F.Y.M. (vi) Local (medium). (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(51) on page 380.

4. GENERAL :

(i) Very good. (ii) Attack of aphids ; spraying of tobacco decoction and endrine. (iii) Yield and height of plant. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 38077 lb./ac. (ii) 2403 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of green fodder in lb./ac.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	41881	42199	39340	28994	36028	40021

S.E./mean = 1201 lb./ac.

Crop :- Lucerne *(Rabi)*. **Ref :- Gj. 59(82).**

Site :- Agri. Res. Stn., Junagadh. **Type :- 'CM'.**

Object :—To study the effect of different spacings and doses of fertilizers for Lucerne.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 18.11.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Hand sowing. (c) 20 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) Nil. (x) 6 cuttings from 28.1.1960 to 11.6.1960.

2. TREATMENTS :

Main-plot treatments :

4 spacings : $S_1=6''$ in rows, $S_2=12''$ in rows, $S_3=12''$ in ridges and furrows and S_4=Broadcast.

Sub-plot treatments :

4 levels of P_2O_5 as Super : $P_0=0$, $P_1=50$, $P_2=100$ and $P_3=100$ lb./ac.

Sub-sub-plot treatments :

2 levels of N as A/S : $N_0=0$ and $N_1=20$ lb./ac.

Manures applied on 18.11.1959 and 31.12.1959.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N A. (iii) 2. (iv) (a) 24′×18′. (b) 20′×14′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green fodder yield. (iv) (a) 1959—1961. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 39735 lb./ac. (ii) (a) 11066 lb /ac. (b) 4995 lb./ac. (c) 10573 lb./ac. (iii) Only main effect of P is highly significant. (iv) Av. yield of green fodder in lb./ac.

	S_1	S_2	S_3	S_4	M_1	M_2	Mean
F_0	36243	23968	29344	37677	34451	29166	31808
F_1	37901	35840	36893	43322	37311	39178	38494
F_2	46189	42381	37834	50669	43232	45293	44262
F_3	47488	40746	40118	49146	44733	44016	44374
Mean	42112	35734	36047	45203	40057	39413	39735
M_1	42112	36176	36467	45472			
M_2	41798	35302	55638	44934			

S.E. of difference of two

1. S marginal means	=3912 lb./ac.
2. P marginal means	=1766 lb./ac.
3. N marginal means	=2643 lb./ac.
4. N means at the same level of P	=5286 lb./ac.
5. N means at the same level of S	=5286 lb./ac.
6. P means at the same level of N	=4134 lb./ac.
7. S means at the same level of N	=5411 lb./ac.
8. P means at the same level of S	=3532 lb./ac.
9. S means at the same level of P	=4966 lb./ac.

Crop :- As per rotations *(Kharif).* **Ref :- Gj. 56(84).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'R'.**

Object :—To find out suitable rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 10.7.1956. (iv) (a) N.A. (b) Drilling. (c) *Jowar*—8 lb./ac., *bajra*—5 lb./ac., groundnut—50 lb./ac. and cotton—20 lb./ac. (d) 18" for groundnut and *jowar*, 36" for cotton and *bajra*. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) *Jowar* and *bajra* mass selected, groundnut A.H.—32 and cotton—*Pratap*. (vii) Unirrigated. (viii) 2 interculturings and 2 weedings. (ix) 26.98". (x) *Jowar* 14.11.1956, *Bajra* 19.11.1956, groundnut 19.10.1956 and cotton 25.11.1956 to 15.1.1957.

2. TREATMENTS :

1 a *Jowar—Jowar.*
1 b *Jawar—Bajra.*
1 c *Jowar*—Groundnut.
1 d *Jowar*—Cotton.
2 a *Bajra—Jowar.*
2 b *Bajra—Bajra.*
2 c *Bajra*—Groundnut.
2 d *Bajra*—Groundnut.
3 a Groundnut—*Jowar.*
3 b Groundnut—*Bajra.*
3 c Groundnut—Groundnut.
3 d Groundnut—Cotton.
4 a Cotton—*Jowar.*
4 b Cotton—*Bajra.*
4 c Cotton—Groundnut.
4 d Cotton—Cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 2. (iv) (a) 36'×36'. (b) 30'×30'. (v) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) *Jowar* affected by aphids and jassids and groundnut affected by *tikka.* (iii) *Kapas*, pod, grain and fodder yield. (iv) (a) 1956—1961. (b) and (c) As per rotations. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

This being the first year of the expt. the analysis is not possible.

Crop :- As per rotations *(Kharif)*. **Ref :- Gj. 57(105).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'R'.**

Object :—To find out suitable rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 3.7.1957. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) *Jowar*—8 lb./ac., *bajra*—5 lb./ac., groundnut—50 lb./ac. and cotton—20 lb./ac. (d) 18" for *jowar* and groundnut ; 36" for cotton and *bajra*. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Jowar* E.M.S., *Bajra* E.M.S., groundnut A.H. 32 and cotton *Pratap*. (vii) Unirrigated. (viii) 3 interculturings. (ix) 28.29". (x) *Jowar* 26.10.1957, *bajra* 26.10.1957, groundnut 12.10.1957 and cotton 8.11.1957 to 6.1.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(84) on page 382.

4. GENERAL :

(i) Due to absence of rains in Sept. and Oct.,the growth of crops suffered to some extent. (ii) Attack of rust and smut in *bajra* ; smut in *jowar* ; *tikka* in groundnut. (iii) Grain, fodder, seed cotton, and pod yield. (iv) (a) 1956—1961. (b) and (c) As per rotations. (v) (a) and (b) N A. (vi) and (vii) Nil.

5. RESULTS :

I. Jowar

(i) 988.0 lb./ac. (ii) 175.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	827.2	902.9	1318.9	902.9

S.E./mean =124.3 lb./ac.

II. Bajra

(i) 565.6 lb./ac. (ii) 56.02 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	512.8	544.2	707.6	497.6

S.E./mean =39.62 lb./ac.

III. Groundnut

(i) 484.4 lb./ac. (ii) 216.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of pod in lb./ac.

Treatment	1	2	3	4
Av. yield	447.7	539.9	492.9	456.9

S.E./mean =152.8 lb./ac.

IV. Cotton

(i) 468.1 lb./ac. (ii) 229.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *Kapas* in lb./ac.

Treatment	1	2	3	4
Av. yield	491.5	556.6	450.6	373.6

S.E./mean =162.3 lb./ac.

Crop :- As per rotations *(Kharif)*. **Ref :- Gj. 58(72).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'R'.**

Object :—To find out suitable rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 1st week of June 1958. (iv) (a) N.A. (b) Drilling. (c) *Jowar* 8 lb./ac., *bajra* 5 lb./ac. and groundnut at 50 lb./ac. (d) 18″ for *jowar* and groundnut ; 36″ for cotton and *bajra.* (e) N.A. (v) 5 C.L/ac. of F.Y.M. (vi) *Jowar* E.M.S ; *bajra* E.M.S ; groundnut A.H.—32 and cotton (Pratap). (vii) Unirrigated. (viii) N.A. (ix) 28.50″. (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(84) on page 382.

4. GENERAL:

(i) and (ii) N.A. (iii) Grain and fodder, seed cotton and pod yield. (iv) (a) 1956—1961. (b) and (c) As per treatments. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Jowar

(i) 462.2 lb./ac. (ii) 70.19 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	306.1	584.4	465.8	492.5

S.E./mean =49.63 lb./ac.

II. Bajra

(i) 679.1 lb./ac. (ii) 80.55 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	399.3	803.4	808.3	705.4

S.E./mean =56.96 lb./ac.

III. Groundnut

(i) 838 lb./ac. (ii) 56.72 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of pod in lb./ac.

Treatment	1	2	3	4
Av. yield	543	1284	800	722

S.E./mean =40.11 lb./ac.

IV. Cotton

(i) 650.4 lb./ac. (ii) 67.47 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3	4
Av. yield	358.9	977.7	659.0	606.2

S.E./mean =47.71 lb./ac.

Crop :- As per rotations *(Kharif)*. **Ref :- Gj. 59(49).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'R'.**

Object :—To find out the suitable rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 1st week of July 1959. (iv) (a) N.A. (b) Drilling. (c) *Jowar* 8 lb./ac., *bajra* 5 lb./ac., groundnut 50 lb./ac. and cotton at 20 lb./ac. (d) *Jowar* 18″, *bajra* 36″, groundnut 18″ and cotton 36″. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Jowar* E.M.S. *Bajra* E.M.S. Groundnut A.H.—32 and Cotton C.J.—73. (vii) Unirrigated. (viii) N.A. (ix) 45.56″. (x) N.A.

2. TREATMENTS and 3. DESIGN:

Same as in expt. no. 56(84) on page 382.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and fodder, seed cotton and pod yield. (iv) (a) 1956—1961. (b) and (c) As per rotations. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

I. Jowar

(i) 185.4 lb./ac. (ii) 37.49 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	151.2	148.8	246.8	194.8

S.E./mean =26.51 lb./ac.

II. Bajra

(i) 54.15 lb./ac. (ii) 11.48 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4
Av. yield	59.29	54.45	65.34	37.51

S.E./mean =8.11 lb./ac.

III. Groundnut

(i) 92.0 lb./ac. (ii) 35.56 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pod in lb /ac.

Treatment	1	2	3	4
Av. yield	113.7	82.3	61.7	110.1

S.E./mean =25.15 lb./ac.

IV. Cotton

(i) 88.3 lb./ac. (ii) 31.30 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb /ac.

Treatment	1	2	3	4
Av. yield	81.1	90.8	136.7	44.8

S.E./mean =22.13 lb./ac.

Crop :- Cotton—Jowar—Lang. **Ref :- Gj. 54(27).**
Site :- Cotton Breeding Stn., Broach. **Type :- 'R'.**

Object :—To assess the use of Lang, Jowar and a mixture of these two as proper rotations with Cotton crop.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Deep black and clayey soil. (b) N.A. (iii) Cotton 30.6.1954, *Jowar* 12.10.1954 and *Lang* 12.10.1954. (iv) (a) 3 harrowings. (b) to (e) N.A. (v) Nil. (vi) Broach—*Vijay* cotton. (vii) Unirrigated. (viii) 3 interculturings and 1 weeding. (ix) 55″. (x) Cotton 19.2.1955 and 19.3.1955 *Jowar* 24.3.1955 and *Lang* 24.3.1955.

2. TREATMENTS :

1. Cotton—*Lang*—Cotton.
2. Cotton—*Jowar*—Cotton.
3. Cotton—*Lang* and *Jowar* mixed—Cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 108′×72′. (iii) 6. (iv) (a) 36′×36′. (b) 24′×28′. (v) 2 guard rows. (vi) Yes.

4. GENERAL .

(i) Satisfactory. (ii) Nil. (iii) *Kapas*, grain and seed yield. (iv) (a) 1954—1961. (b) Yes. (c) —. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 681.2 lb./ac. (ii) 164.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	700.1	656.8	686.8

S.E./mean =67.3 lb./ac.

II. Jowar

(i) 659.2 lb./ac. (ii) 121.6 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3
Av. yield	785.6	532.7

S.E./mean =49.6 lb./ac.

III. Lang

(i) 201.7 lb./ac. (ii) 45.90 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	1	3
Av. yield	319.2	84.1

S.E./mean =18.74 lb./ac.

Crop :- Cotton—Jowar—Lang. **Ref :- Gj. 55(14).**

Site :- Cotton Breeding Stn., Broach. **Type :- 'R'.**

Object :—To assess the use of Lang, Jowar and a mixture of these two as proper rotations with Cotton crop.

1. BASAL CONDITIONS

(i) (a) and (b) As per rotations. (c) Nil. (ii) (a) Deep black and clayey soil. (b) N.A. (iii) *Jowar* 28.10.1955, *lang* 28.10.1955 and cotton 5.7.1955. (iv) (a) Four harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Broach—*Digvijay* cotton. (vii) Unirrigated. (viii) 3 interculturings and 1 weeding. (ix) 33". (x) *Jowar* 1.2.1956 and 13.4.1956, *lang* 1.2.1956 and 13.4.1956 and cotton 30.1.1956, 29.2.1956 and 5.4.1956.

2. TREATMENTS to 3. DESIGN :

Same as in expt. no. 54(27) on page 385.

4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas*, grain and seed yield. (iv) (a) 1954—1961. (b) Yes. (c) —. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 727.3 lb./ac. (ii) 94.82 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	569.6	894.4	717.9

S.E./mean =38.71 lb./ac.

II. Jowar

(i) 294.5 lb./ac. (ii) 112.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3
Av. yield	375.6	213.5

S.E./mean =45.8 lb./ac.

III. Lang

(i) 217.4 lb./ac. (ii) 45.04 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	1	3
Av. yield	283.7	151.0

S.E./mean =18.39 lb./ac.

Crop :- Cotton-Jowar-Lang. **Ref :- Gj. 56(14).**

Site :- Cotton Breeding Stn., Broach. **Type :- 'R'.**

Object :—To assess the use of Lang, Jowar and a mixture of these two as proper rotations with Cotton crop.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per rotations. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black and clayey soil. (b) N.A. (iii) Cotton—26.6.1956, *Jowar*—29.10.1956 and *Lang*—29.10.1956. (iv) (a) 4 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Broach—*Digvijay* cotton. (vii) Unirrigated. (viii) 3 interculturings, 2 gap fillings and 2 weedings. (ix) 57″. (x) Cotton—25.3.1957 and 23.4.1957, *jowar*—13.4.1957 and *lang*—8.2.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(27) on page 385.

4. GENERAL:

(i) First sown crop failed due to excessive rains. Gap fillings gave a good stand. (ii) Nil. (iii) *Kapas*, grain and seed yield. (iv) (a) 1954—1961. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Low yield due to late sowing.

5. RESULTS :

I. Cotton

(i) 334.2 lb./ac. (ii) 52.63 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	312.3	385.6	304.8

S.E./mean =21.49 lb./ac.

II. Jowar

(i) 548.1 lb./ac. (ii) 84.67 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3
Av. yield	772.8	323.4

S.E./mean =34.57 lb./ac.

III. Lang

(i) 409.9 lb./ac. (ii) 114.1 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	1	3
Av. yield	595.7	224.0

S.E./mean =46.6 lb./ac.

Crop :- Cotton-Jowar-Lang. **Ref :-Gj. 57(12).**

Site :- Cotton Breeding Stn., Broach. **Type :- 'R'.**

Object :—To assess the use of Lang, Jowar and a mixture of these two as proper rotations with Cotton crop.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per rotations. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black and clayey. (b) N.A. (iii) Cotton—24.6.1957 ; *Lang* and *Jowar*—18.9 1957. (iv) (a) 1 to 2 harrowings. (b) to (e) N.A. (v) 2 C.L./ac. of F.Y.M. (vi) Cotton—Broach *Digvijay*. (vii) Unirrigated. (viii) 4 interculturings and 1 gap filling. (ix) 28.94″. (x) Cotton—20, 21, 22.2.1958 ; *Lang*—29.1.1958 ; *Jowar*—4.2.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(27) on page 385.

4. GENERAL :

(i) Normal. (ii) Attack of pink boll-worm in 1st stage of crop. (iii) *Kapas*, grain and seed yield. (iv) (a) 1954—1961. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 360.6 lb./ac. (ii) 57.62 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	311.2	414.2	356.4

S.E./mean =23.52 lb./ac.

II. Jowar

(i) 393.4 lb./ac. (ii) 121.6 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3
Av. yield	526.9	259.8

S.E./mean =49.6 lb./ac.

III. Lang

(i) 38.86 lb./ac. (ii) 10.0 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	1	3
Av. yield	63.57	14.16

S.E./mean =4.08 lb./ac.

Crop :- Cotton-Jowar-Lang. **Ref :- Gj. 58(5).**

Site :- Cotton Breeding Stn., Broach. **Type :- 'R'.**

Object :—To assess the use of Lang, Jowar and a mixture of these two as proper rotations with Cotton crop.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per rotations. (c) 2 C.L./ac. of F.Y.M. (ii) (a) Deep black and clayey. (b) N.A. (iii) 1st week of July, 1958. (iv) (a) 3 harrowings. (b) Dibbling. (c) N.A. (d) 2′×6′ for cotton. (e) 4 to 5 seeds/dibble for cotton. (v) 2 C.L./ac. of F.Y.M. (vi) Cotton—Broach *Digvijay*. (vii) Unirrigated. (viii) 5 interculturings. (ix) 40.62″. (x) Cotton—6.2.1959, 24, 25.2.1959; *Lang* and *Jowar* 20.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(27) on page 385.

4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas*, grain and seed yield. (iv) (a) 1954—1961. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 687.2 lb./ac. (ii) 55.63 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	631.8	818.1	611.8

S.E./mean =22.71 lb./ac.

II. Jowar

(i) 420.3 lb./ac. (ii) 69.23 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3
Av. yield	489.1	351.4

S.E./mean =28.26 lb./ac.

III. Lang

(i) 92.7 lb./ac. (ii) 35.92 lb./ac. (iii) Treatment differences is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	1	3
Av. yield	134.6	50.8

S.E./mean =14.66 lb./ac.

Crop :- Cotton-Jowar-Lang. **Ref :- Gj. 59(50).**

Site :- Cotton Breeding Stn., Broach. **Type :- 'R'.**

Object :—To assess the use of Lang, Jowar and a mixture of these two as proper rotations with Cotton crop.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per rotations. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black and clayey. (b) N.A. (iii) Cotton—6.8. 1959 and *Lang* and *Jowar* 27.10.1959. (iv) (a) 3 harrowings. (b) Dibbling for Cotton. Drilling for *Jowar* and *Lang*. (c) Cotton—5 lb./ac. ; *Jowar*—12 lb./ac. and *Lang*—40 lb./ac. (d) Cotton—6′, *Jowar*—3′ and *Lang*—1½′. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Cotton—*Digvijay*. (vii) Unirrigated. (viii) 4 interculturings. (ix) N.A. (x) Cotton : 1, 2 and 20.4.1960 ; *Lang* and *Jowar* : 11.3.1960.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(27) on page 385.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Seed cotton, grain and fodder yield. (iv) (a) 1954—1961. (b) and (c) Yes. (v) (a) Bhuwa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 336.1 lb./ac. (ii) 91.66 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	325.1	341.4	341.7

S.E./mean =37.42 lb./ac.

II. Jowar

(i) 715.9 lb./ac. (ii) 178.2 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3
Av. yield	986.9	445.0,

S.E./mean =72.7 lb./ac.

III. Lang

(i) 301.9 lb /ac. (ii) 65.84 lb./ac. (iii) Treatment difference is highly significant. (v) Av. yield of *lang* seed in lb./ac.

Treatment	1	3
Av. yield	490.8	113.0

S.E./mean =26.88 lb./ac.

Crop :- Cotton—Jowar—Lang. **Ref :- Gj. 54(99).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'R'.**

Object :—To fix up the best rotation for Cotton.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) Cotton : 19.8.1954 *Jowar* : 15.10.1954 and *Lang* : 29.8.1954. (iv) (a) N.A. (b) Cotton dibbled. *Jowar* and *Lang* drilled. (c) Cotton and *Jowar* 8 lb./ac. and *Lang* 40 lb./ac. (d) Cotton 6′, *Jowar* 3′ and *Lang* 1.5′. (e) N.A. (v) Nil. (vi) Cotton—*Digvijay*. (vii) Unirrigated. (viii) 2 interculturings and 2 weedings. (ix) 43.48″. (x) Cotton : 12, 26.3.1955, 12.4.1955. *Jowar* : 12.3.1955 and *Lang* : 19.1.1955.

2. TREATMENTS :

1. Cotton—*Jowar*—Cotton.
2. Cotton—*Lang*—Cotton.
3. Cotton—*Jowar* and *Lang*—Cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 216′×216′. (iii) 6. (iv) (a) 36′×36′. (b) 28′×24′. (v) 4′×6′. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Seed cotton, grain and seed yield. (iv) (a) 1954—1958. (b) and (c) 1st year of crop. (v) (a) and (b) Broach. (vi) Due to heavy rains after sowing the growth of the crops was not quite normal. (vii) Nil.

5. RESULTS :

I. Cotton

(i) 522.3 lb./ac. (ii) 83.00 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of seed cotton in lb./ac.

Treatment	1	2	3
Av. yield	415.0	613.4	538.6

S.E./mean =33.88 lb./ac.

II. Jowar

(i) 654.9 lb./ac. (ii) 276.6 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	3
Av. yield	889.5	420.3

S.E./mean =112.9 lb./ac.

III. Lang

(i) 344.7 lb./ac. (ii) 150.1 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	2	3
Av. yield	439.2	250.2

S.E./mean =61.3 lb./ac.

Crop :- Jowar—Lang—Cotton. **Ref :- Gj. 55(13).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'R'.**

Object :—To fix up the best rotation for Cotton.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) Cotton : 3.7.1955, *Jowar* : 2.11.1955, *Lang* : 2.11.1955. (iv) (a) N.A. (b) Drilling in *Jowar* and *Lang*. Dibbling in cotton. (c) *Jowar* and cotton 8 lb./ac. *Lang* 40 lb./ac. (d) Cotton 6′, *Jowar* 3′, *Lang* 1.5′. (e) 3-4 seeds/dibble. (v) Nil. (vi) *Jowar* No. 8 ; *Lang*—Indore T-2-12 ; Cotton—*Vijaya*. (vii) Unirrigated. (viii) Cotton : 1 thinning and 2 interculturings. *Jowar* : 1 thinning, 1 interculturing and 1 weeding. (ix) 34.87″. (x) Cotton : 21.2.1956, 9.3.1956, and 8.4.1956, *Jowar* : 14.3.1956 and *Lang* : 2.2.1956.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(99) on page 390.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Seed cotton, grain and seed yield for *jowar* and *lang*. (iv) (a) 1 954—1958. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 954 lb./ac. (ii) 215.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	924	856	1083

S.E./mean =87.9 lb./ac.

II. Jowar

(i) 185.2 lb./ac. (ii) 101.7 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	3
Av. yield	286.1	84.2

S.E./mean =41.5 lb./ac.

III. Lang

(i) 768.4 lb./ac. (ii) 95.05 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	2	3
Av. yield	942.9	594.0

S.E./mean =38.80 lb./ac.

Crop :- Jowar—Lang—Cotton. **Ref :- Gj. 56(12).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'R'.**

Object :—To fix up the best rotation for Cotton.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) Cotton : 1.7.1956 ; *Jowar* : 18.9,1956 ; *Lang* : 18.10.1956. (iv) (a) N.A. (b) *Jowar* and *lang* drilled. Cotton dibbled. (c) *Jowar* and cotton 8 lb./ac. *Lang* 40 lb./ac. (d) Cotton : 6′×1′ ; *Jowar* : 3′×9″ ; *Lang* : 1.5′×6″. (e) 3 to 4 seeds/dibble. (v) Nil. (vi) *Jowar* No. 8 ; *Lang*—Indore T—2.12, Cotton—*Digvijaya*. (vii) Unirrigated. (viii) Cotton : 4 gap-fillings, 2 thinnings, 3 weedings and 8 interculturings, *Jowar* : 1 gap-filling and 1 interculturing. (ix) 48.28″. (x) Cotton : 10, 21.3.1957, 20.4.1957, *Jowar* : 23.2.1957, *Lang* : 29.1.1957.

2. TREATMENTS and 3. DESIGN :
Same as in expt. no. 54(99) on page 390.

4. GENERAL :
(i) Growth of the crops was checked due to heavy rains. (ii) Boll-worm attack on cotton. Light attack of stem-borer on *Jowar*. (iii) Grain, *kapas* and seed yield. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 608.4 lb./ac. (ii) 66.73 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	440.2	859.9	525.2

S.E./mean =27.24 lb./ac.

II. Jowar

(i) 476.6 lb./ac. (ii) 97.87 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	3
Av. yield	536.8	416.4

S.E./mean =39.96 lb./ac.

III. Lang

(i) 436.8 lb./ac. (ii) 28.99 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	2	3
Av. yield	538.1	335.6

S.E./mean =11.84 lb./ac.

Crop :- Cotton—Jowar—Lang. **Ref :- Gj. 57(10).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'R'.**

Object :—To fix up the best rotation for Cotton.

1. BASAL CONDITIONS :
(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) Cotton 5.7.1957 *jowar* 21.9.1957 ; *Lang* 3.10.1957. (iv) (a) N.A. (b) Cotton—dibbling, *Jowar* and *Lang*—drilled. (c) Cotton : 6 lb./ac. *Jowar* : 8 lb./ac. *Lang* : 40 lb./ac. (d) Cotton—6′×2′. *Jowar*—3′×9″. *Lang*—1.5′×6″. (e) 3 to 4 seeds/dibble for cotton. Others N.A. (v) Nil. (vi) *Jowar* No—8 ; *lang*—Indore T-2-12 ; Cotton—*Digvijaya*. (vii) Unirrigated. (viii) Cotton : 2 thinnings, 1 weeding and 5 interculturings. *Jowar* : 1 thinning, 1 weeding and 1 interculturing. (ix) 15.68″. (x) Cotton : 7.1.1958, 21.1.58, 8.2.1958. *Jowar* : 11.2.1958. *Lang* : 26.2.1958.

2. TREATMENTS and 3. DESIGN :
Same as in expt. no. 54(99) on page 390.

4. GENERAL :
(i) Below normal. (ii) Light attack of boll worm. Heavy attack of pod borer. (ii) Grain, *kapas* and seed yield. (iv) (a) 1954—1958. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 229.1 lb./ac. (ii) 43.96 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	296.2	53.2	337.9

S.E./mean =17.95 lb./ac.

II. Jowar

(i) 131.3 lb./ac. (ii) 52.66 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatmant	1	3
Av. yield	170.7	91.9

S.E./mean =21.50 lb./ac.

III. Lang

(i) 178.5 lb./ac. (ii) 50.62 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of *lang* seed in lb./ac.

Treatment	1	2
Av. yield	345.2	11.8

S.E./mean =20.67 lb./ac.

Crop :- Cotton—Jowar—Lang. **Ref :- Gj. 58(115).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'R'.**

Object :—To fix up the best rotation for Cotton.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) Cotton : 5.7.1958, *Jowar* : 21.9.1958, *Lang* : 23.10.1958. (iv) (a) 1 ploughing, 1 harrowing. (b) to (e) N A. (v) Nil. (vi) Cotton—*Digvijaya*, *Jowar*—B. No. 8, *Lang*—T—2-12. (vii) Unirrigated. (viii) 4 weedings and 8 interculturings. (ix) 37.62″. (x) Cotton : 14.2.1959, 1.3.1959, 19.3.1959, 31.3.1959, *Jowar* : 24.3.1959 and *Lang* : 24.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(99) on page 390.

4. GENERAL :

(i) Cotton : Germination was satisfactory but due to heavy rains, some of the plants died which resulted in low yield. (ii) Light attack of boll worm. (iii) Seed cotton, *jowar* and *lang* grains. (iv) (a) 1954—1958. (b) No. (c) Nil. (v) (a) and (b) Broach. (vi) Nil. (vii) Results for *jowar* and *lang*—N.A.

5. RELULTS :

Cotton

(i) 444 lb./ac. (ii) 145.3 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	2	3
Av. yield	306	563	463

S.E./mean =59.3 lb./ac.

Crop :- Groundnut—Cotton—Bajra—Jowar. **Ref :- Gj. 54(56).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'R'.**

Object :—To find out the best rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) Groundnut—29.6.1954, Cotton—2.7.1954 and *Jowar* and *Bajra*—19.6.1954. (iv) (a) 2 to 3 harrowings. (b) Drilled. (c) 10 lb./ac. for *Jowar* and *Bajra*. (d) Between rows 3′ for all crops. Between plants : Groundnut 2″, Cotton 6″, *Bajra* and *Jowar* irregular. (e) Groundnut—1, Cotton—2 to 3 (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Groundnut—Kopergaon, Cotton—Kalyan, *Bajra*—Local, *Jowar*—Local. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 38.33″. (x) Groundnut—2.11.1954, Cotton—10.2.1955, *Bajra* and *Jowar*—25.10.1954.

2. TREATMENTS :

1. Groundnut—Groundnut.	6. Cotton—Groundnut.
2. Groundnut—*Bajra*.	7. *Jowar*—*Jowar*.
3. Groundnut—*Jowar*.	8. *Jowar*—Groundnut.
4. Groundnut—Cotton.	9. *Bajra*—*Bajra*.
5. Cotton—Cotton.	10. *Bajra*—Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 50′×24′. (b) 44′×12′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) 5% attack of *tikka*. (iii) Grain and fodder yield. (iv) (a) 1952—contd. (b) As per treatments. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Groundnut

(i) 1286 lb./ac. (ii) 108.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pod in lb./ac.

Treatment	2	5	7	10
Av. yield	1223	1376	1249	1234

S.E./mean =54.1 lb./ac.

II. Cotton

(i) 382.3 lb./ac. (ii) 71.6 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	8
Av. yield	296.0	468.6

S.E./mean =35.8 lb./ac.

III. Bajra

(i) 466.6 lb./ac. (ii) 50.40 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	3	6
Av. yield	424.8	508.4

S.E./mean =25.20 lb./ac.

IV. Jowar

(i) 191.6 lb /ac. (ii) 46.18 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	4	9
Av. yield	128.5	254.6

S.E./mean =23.09 lb./ac.

Crop :- Groundnut—Cotton—Bajra—Jowar. **Ref :- Gj. 55(43).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'R'.**

Object :—To find out the best rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) and (ii) Same as in expt. no. 54(56) on page 393. (iii) Groundnut—5.8.1955, *Bajra*—5.8.1955, Cotton 5.8.1955, *Jowar*—5.8.1955. (iv) to (vii) Same as in expt. no. 54(56) on page 393. (viii) Gap-filling, thinning and 3 weedings. (ix) 21.93″. (x) Groundnut—7.10.1955, *Bajra*—3.11.1955, Cotton—15.2.1956, 29.3.1956 and *Jowar*—9.11.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(56) on page 393.

GENERAL :

(i) Stunted and scanty growth due to late rains. (ii) Attack of aphids on groundnut. Spraying of Nicotin Sulphate. (iii) Grain and fodder yield. (iv) (a) 1952—contd. (b) As per treatments. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Groundnut

(i) 635.5 lb./ac. (ii) 86.39 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pod in lb./ac.

Treatment	3	4	7	8
Av. yield	220.0	731.1	729.7	861.3

S.E./mean =43.19 lb./ac.

II. Cotton

(i) 777.3 lb./ac. (ii) 146.0 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	1	6
Av. yield	821.1	733.6

S.E./mean =73.0 lb./ac.

III. Bajra

(i) 370.8 lb./ac. (ii) 11.67 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	5
Av. yield	442.9	298.7

S.E./mean =5.84 lb./ac.

IV. Jowar

The crop failed

Crop :- Groundnut—Cotton - Bajra—Jowar. Ref :- Gj. 56(50).

Site :- Central Expt. Stn., Junagadh. Type :- 'R'.

Object :—To find out the best rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) and (ii) Same as in expt. no. 54(56) on page 393. (iii) N.A. (iv) and (v) Same as in expt. no. 54(56) on page 393. (vi) Groundnut—Kopergaon ; Cotton—Kalyan ; *Bajra*—local ; *Jowar*—selection 213. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 59.56″. (x) N.A.

2. TREATMENTS to 3. DESIGN :
Same as in expt. no. 54(56) on page 393.

4. GENERAL :

(i) *Jowar* below normal. Other crops normal. (ii) Nil. (iii) Grain and fodder yield. (vi) (a) 1952—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Groundnut

(i) 1328 lb./ac. (ii) 182.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pod in lb./ac.

Treatment	1	4	6	8
Av. yield	1400	1324	1295	1293

S.E./mean =91.4 lb./ac.

II. Cotton

(i) 412.7 lb./ac. (ii) 57.55 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	9	10
Av. yield	423.7	401.7

S.E./mean =28.78 lb./ac.

III. Bajra

(i) 579.4 lb./ac. (ii) 48.10 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	5
Av. yield	607.9	551.0

S.E./mean =24.05 lb./ac.

IV. Jowar

(i) 254.3 lb./ac. (ii) 16.35 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	3	7
Av. yield	228.7	279.9

S.E./mean =8.17 lb./ac.

Crop :- Groundnut—Cotton—Bajra—Jowar. **Ref :- Gj. 57(58).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'R'.**

Object :—To find out the best rotation of crops for this tract.

1. BASAL CONDITIONS :

(i) and (ii) Same as in expt. no. 54(56) on page 393. (iii) 1.7.1957. (iv) to (vii) Same as in expt. no. 56(50) on page 395. (viii) 2 interculturings and 2 to 3 weedings. (ix) 30.21". (x) Cotton : 18.1.1958, 20.2.1958, 22.3.1958 ; *Jowar* : 4.11.1957 ; *Bajra* : 4.10.1957 ; Groundnut : 18.10.1957.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(56) on page 393.

4. GENERAL :

(i) Normal. (ii) *Tikka* and aphids for groundnut. (iii) Grain and fodder yield. (iv) (a) 1952—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Scanty rains affected the growth of the crop. (vii) Nil.

5. RESULTS :

I. Groundnut

(i) 857.0 lb./ac. (ii) 86.22 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of pod in lb./ac.

Treatment	2	3	6	8
Av. yield	734.0	963.2	857.6	873.2

S.E./mean =43.11 lb./ac.

II. Cotton

(i) 410.8 lb./ac. (ii) 27.77 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in lb./ac.

Treatment	4	10
Av. yield	401.7	419.8

S.E./mean =13.88 lb./ac.

III. Bajra

(i) 409.4 lb./ac. (ii) 62.29 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	5	9
Av. yield	396.6	422.3

S.E./mean =31.14 lb./ac.

Crop :- Groundnut, Wheat and Sann. **Ref :- Gj. 57(60).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'R'.**

Object :—To find out the best rotational system for Groundnut and Wheat.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) Groundnut 3.7.1957, Sann 11.7.1957 and Wheat 31.10.1957. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) Groundnut 2′, Sann 1′ and Wheat 1′ between rows ; within rows irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied 15 days before sowing. (vi) Groundnut : AK 12-24 ; Sann : Local ; Wheat : N.P.-710. (vii) Irrigated. (viii) Two interculturings and 2 to 3 weedings. (ix) 30.21″. (x) Groundnut 18.10.1957, Sann 1.9.1957 and Wheat 26.2.1958.

2. TREATMENTS :

1. Groundnut—Groundnut. (Fallow in *Rabi*)
2. Groundnut—Wheat.
3. G.M.—Wheat.
4. Fallow—Wheat.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 40′×12′. (b) 36′×8′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) The germination was good, the growth was normal. (ii) *Tikka* and aphids in groundnut, pest in wheat. (iii) Pod and fodder for groundnut. Grain and straw for wheat. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) There were no rains for the first fortnight of August which has considerably affected the yield of the groundnut and rotting of Sann. Wheat was normal. (vii) Nil.

5. RESULTS :

I. Groundnut

(i) 624.4 lb./ac. (ii) 121.0 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of pod in lb./ac.

Treatment	1	2
Av. yield	633.8	614.9

S.E./mean =49.4 lb./ac.

II. Wheat

(i) 2086 lb./ac. (ii) 162.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3	4
Av. yield	1929	2175	2153

S.E./mean =66.5 lb./ac.

Crop :- Wheat, Sann and Groundnut. **Ref :- Gj. 58(43).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'R'.**

Object :—To find out the best rotational system for Groundnut and Wheat.

1. BASAL CONDITIONS:

(i) (a) and (b) As per treatments. (c) —. (ii) (a) Black loamy soil. (b) Refer soil analysis, Junagadh. (iii) Groundnut : 3.7.1958, Sann : 3.7.1958 and Wheat : 6.4.1958. (iv) (a) One harrowing before sowing of groundnut and one before sowing of wheat. (b) to (e) N.A. (v) Nil. (vi) Wheat-Kenphad Groundnut-A.K. 12-24 (medium). (vii) Irrigated. (viii) 2 interculturings and 3 weedings. (ix) 34″. (x) Groundnut : 17.8.1958, sann : 8.9.1958 and wheat : 5.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(60) on page 397.

4. GENERAL :

(i) Nil. (ii) Groundnut crop was affected by *tikka* to some extent. (iii) Groundnut pod, wheat grain and straw yield. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Groundnut

(i) 1167 lb./ac. (ii) 91.96 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of pod in lb./ac.

Treatment	1	2
Av. yield	1282	1052

S.E./mean =37.54 lb./ac.

II. Wheat

(i) 2329 lb./ac. (ii) 182.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	2	3	4
Av. yield	2124	2555	2309

S.E./mean =74.6 lb./ac.

Crop :- Groundnut, Wheat and Sann. **Ref :- Gj. 59(107).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'R'.**

Object :—To find out the best rotation for Groundnut and Wheat.

1. BASAL CONDITIONS:

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) Groundnut : 27.6.1959 and Wheat-N.A. (iv) (a) 1 ploughing. (b) Drilling. (c) Groundnut-80 lb./ac. Wheat-80 lb./ac. (d) Groundnut-2′ and Wheat-1′. (e) 2 seeds/hill for groundnut. (v) Nil. (vi) Groundnut AK—12-24 ; Wheat N.P.-710. (vii) Groundnut unirrigated and wheat irrigated. (viii) 2 interculturings and 3 weedings. (ix) 59.48″. (x) Groundnut-20.10.1959 and Wheat-N.A.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(60) on page 397.

4. GENERAL :

(i) Medium. (ii) Moderate attack of *tikka*. (iii) Wheat grain and Groundnut pod. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Groundnut failed due to heavy rains. (vii) Nil.

5. RESULTS :

(i) 422.0 Rs./ac. (ii) 105.3 Rs./ac. (iii) Treatment differences are highly significant. (iv) Money value in Rs./ac.

Treatment	1	2	3	4
Av. value	29.5	644.1	560.0	454.5

S.E./mean =43.0 Rs./ac.

Crop :- Cotton, Jowar and Tur. **Ref :- Gj. 54(68).**

Site :- Agri. Res. Stn., Surat. **Type :- 'R'.**

Object :—To study the best rotation for Cotton, Jowar and Tur with and without manures.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton on 24.6.1954, *Jowar* on 20.9.1954 and *Tur* on 20.9.1954. (iv) (a) N.A. (b) Drilled. (c) Cotton and *Jowar* : 8 to 10 lb./ac. ; *Tur* : 12 to 15 lb./ac. (d) 6′×2′ for cotton and 3′×1′ for *jowar* and *tur*. (e) N.A. (v) Nil. (vi) Cotton : *Suyog* ; *Jowar* : B.P. 53 ; *Tur* : Local. (vii) Unirrigated. (viii) 1 thinning, 2 weedings and 3 Interculturings. (ix) 81.54″. (x) Cotton : 7.4.1955 and 27.4 1955. *Tur* : 26.4.1955. *Jowar* : 24.2.1955.

2. TREATMENTS :

12 rotations as follows :

(1) Cm—every year
(2) Cm—C
(3) Jm—every year
(4) Jm—J
(5) Cm—J
(6) C—T
(7) Cm—T
(8) J—T
(9) Jm—T
(10) Cm—J—T
(11) Cm—T—J
(12) J+T—C

Details of rotations :

C=Cotton unmanured
Cm=Cotton manured with 5 C.L./ac. of F.Y.M.
J=*Jowar* unmanured
Jm=*Jowar* manured with 5 C.L./ac. of F.Y.M.
T=*Tur* unmanured
Tm=*Tur* manured

From 1951 onwards each plot was divided horizontally into two sub-plots. Whenever *Tur* was grown one sub-plot was selected at random and was manured with 100 lb./ac. of P_2O_5 as Super.

F.Y.M. applied on 12.6.1954 and P_2O_5 on 30.8.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 46. (b) N.A. (iii) 6. (iv) (a) 31′×30′. (b) 22′×18′ for treatments 1 to 11. For treatment 12 : 50′×18′. (v) 6′ on either side, 6′ on one end and 3′ on the other. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) 40% attack of stem-borer in *Jowar*. Heavy attack of pod-borer in *Tur*. (iii) Seed cotton, *Jowar* grain and fodder. *Tur* pods in lbs. (iv) (a) 1948—contd. (modified in 1951 and 1954). (b) and (c) As per rotations. (v) Jalgaon. (vi) and (viii) Nil.

5. RESULTS :

I. Cotton

(i) 803 lb./ac. (ii) 104.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Rotation no. :	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)	(12)
Crop :	Cm	Cm	C	Cm	C	C	Cm	Cm	Cm	Cm	Cm	C
Previous crop :	Cm	C	Cm	J	T	Tm	T	Tm	T	Tm	J	J+T
Av. yield	1016	687	980	1291	569	519	592	559	704	776	1330	617

S.E./mean = 42.7 lb./ac.

II. Jowar

(i) 842 lb./ac. (ii) 224.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Rotation no.	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(11)	(11)	(12)
Crop :	Jm	Jm	J	J	J	J	Jm	Jm	J	J	J	J+T
Previous crop :	Jm	J	Jm	Cm	T	Tm	T	Tm	Cm	T	Tm	C
Av. yield	838	1060	677	1016	666	1045	675	611	1059	655	629	1167

S.E./mean =91.7 lb./ac.

III. Tur

(i) 239 lb./ac. (ii) 66.50 lb./ac. (iii) Main effect of rotations is highly significant. Others are not significant. (iv) Av. yield of pod in lb./ac.

Rotation no.	(6)	(7)	(8)	(9)	(10)	(11)	
Previous crop	C	Cm	J	Jm	J	Cm	Mean
Manures							
Tm	206	203	201	203	240	343	233
T	211	254	233	217	269	293	246
Mean	208	228	217	210	255	318	239

S.E. of marginal mean of rotations =19.20 lb./ac.
S.E. of marginal mean of manures =11.08 lb /ac.
S.E. of body of table =27.15 lb./ac.

Crop :- Cotton—Jowar—Tur *(Kharif).* **Ref :- Gj. 55(50).**

Site :- Agri. Res. Stn., Surat. **Type :- 'R'.**

Object :—To study the best rotations for Cotton, Jowar and Tur with and without manures.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton-23.6.1955, *jowar* and *tur* 23.7.1955. (iv) (a) N.A. (b) Cotton—dibbling, *jowar* and *tur*—drilling. (c) 8 to 10 lb./ac.-*jowar*, 10 to 15 lb./ac.-*tur*. and 2½ to 3 lb./ac.-cotton. (d) Cotton-6′×2′, *Jowar* and *Tur*-3′×1′. (e) N.A. (v) Nil. (vi) Cotton—*Suyog*, *jowar*—B.P. 53, *Tur*—local. (vii) Unirrigated. (viii) 1 thinning for all plots. (ix) 26.98″. (x) Cotton—16.3.1956 and 3.4.1956, *jowar*—5.3.1956 and *tur*—30.3.1956.

2. TREATMENTS :

Same as in expt. no. 54(68) on page 399.
F.Y.M. spread on 8.6.1955 and P_2O_5 applied on 23.7.1955.

3. DESIGN :

(i) R.B.D. (ii) (a) 46. (b) N.A. (iii) 6. (iv) (a) 31′×30′ for treatments 1 to 11. For treatment 12—50′×18′. (b) 22′×18′. (v) 6′ at either side, 6′ at one end and 3′ at the other. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of grey mildew on cotton. (iii) Seed cotton, *jowar* and *tur* grain yield. (iv) (a) 1948—contd (modified in 1951 and 1954). (b) As per rotations. (c) Nil. (v) (a) and (b) Jalgaon. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 1115 lb./ac. (ii) 77.72 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Rotation no.	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)	(12)
Crop	Cm	C	Cm	Cm	C	C	Cm	Cm	Cm	Cm	Cm	C
Pre. crop	Cm	Cm	C	J	T	Tm	T	Tm	T	Tm	J	J+T
Av. yield	1328	1132	1143	1635	824	803	1006	913	892	879	1551	1278

S.E./mean =31.73 lb./ac.

II. Jowar

(i) 1187 lb./ac. (ii) 125.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Rotation no.	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(11)	(11)	(12)
Crop	Jm	J	Jm	J	J	J	Jm	Jm	J	J	J	J+T
Previous crop	Jm	Jm	J	Cm	T	Tm	T	Tm	Cm	T	Tm	C
Av. yield	1741	1562	1598	1365	820	797	930	945	1621	838	843	1182

S.E./mean =51.0 lb./ac.

III. Tur

(i) 417 lb./ac. (ii) 113.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Rotation no. Pre. crop Manures	(6) C	(7) Cm	(8) J	(9) Jm	(10) J	(11) Cm	Mean
Tm	341	418	430	542	384	469	431
T	311	379	444	417	441	428	403
Mean	326	398	437	479	413	449	417

S.E. of marginal mean of rotations =32.8 lb./ac.
S.E. of marginal mean of manures =18.9 lb./ac.
S.E. of body of table =46.4 lb./ac.

Crop :- Cotton, Jowar and Tur *(Kharif)*. **Ref :- Gj. 56(59).**

Site :- Agri. Res. Stn., Surat. **Type :- 'R'.**

Object :—To study the best rotation for Cotton, Jowar and Tur with and without manures.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton 21.6.1956, *jowar* and *tur*—25.8.1956. (iv) (a) N.A. (b) Cotton—dibbling, *jowar* and *tur*—drilling. (c) 8 to 10 lb./ac. for *jowar*, 10 to 15 lb./ac. for *tur* and 2½ to 3 lb./ac. for cotton. (d) 6′×2′ cotton and 3′×1′ for *jowar* and *tur*. (e) N.A. (v) Nil. (vi) Cotton—*Suyog*, *jowar*—B.P.-53, *tur*—local. (vii) Unirrigated. (viii) Gap filling for *jowar* and *tur*. (ix) 41.80″. (x) Cotton 21.3.1957, 14.5.1957, *Jowar* 4.2.1957 and *Tur* 4.3.1957.

2. TREATMENTS :

Same as in expt. no. 54(68) on page 399.
F.Y.M. spread on 30.5.1956 and P_2O_5 applied on 25.8.1956.

3. DESIGN :

(i) R.B.D. (ii) (a) 46. (b) N.A. (iii) 6. (iv) (a) 31′×30′ for treat. 1 to 11 and for treat. 12 : 62′×30′. (b) For treatments 1 to 11 : 22′×18′. For treatment 12 : 50′×18′. (v) 6′ at either side, 6′ at one end and 3′ at the other end. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Heavy attack of boll worm. (iii) Seed cotton, *jowar* and *tur* grains. (iv) (a) 1948—contd. (modified in 1951 and 1954) (b) As per rotations. (c) Nil. (v) (a) Jalgaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 537 lb./ac. (ii) 88.81 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Rotation no. :	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)	(12)
Crop :	Cm	Cm	C	Cm	C	C	Cm	Cm	Cm	Cm	Cm	C
Pre. crop :	Cm	C	Cm	J	T	Tm	T	Tm	T	Tm	J	J+T
Av. yield :	482	415	532	857	351	286	381	342	445	412	1273	665

S.E./mean =36.26 lb./ac.

II. Jowar

(i) 517 lb./ac. (ii) 152.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Rotation no. :	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(11)	(11)	(12)
Crop :	Jm	Jm	J	J	J	J	Jm	Jm	J	J	J	J+T
Pre. crop :	Jm	J	Jm	Cm	T	Tm	T	Tm	Cm	T	Tm	C
Av. yield .	775	708	489	729	369	322	411	417	696	344	335	612

S.E./mean =62.4 lb./ac.

III. Tur

(i) 226 lb./ac. (ii) 90.71 lb./ac. (iii) Main effect of rotations is highly significant. (iv) Av. yield of grain in lb./ac.

Rotation no.	(6)	(7)	(8)	(9)	(10)	(11)	
Pre. crop Manures	C	Cm	J	Jm	J	Cm	Mean
Tm	210	222	249	211	279	207	230
T	197	198	232	232	280	199	223
Mean	204	210	240	222	279	203	226

S.E. of marginal mean of rotations =26.19 lb./ac.
S.E. of marginal mean of manures =15.12 lb./ac.
S.E. of body of table =37.03 lb./ac.

Crop :- Cotton, Jowar and Tur *(Kharif)*. **Ref :- Gj. 57(68).**

Site :- Agri. Res. Stn., Surat. **Type :- 'R'.**

Object :—To study the best rotation for Cotton, Jowar and Tur with and without manures.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton—30.6.1957, *Jowar*—9.9.1957 and *Tur*—10.9.1957. (iv) (a) Nil. (b) Cotton—dibbling, *Jowar* and *Tur*—drilled (c) *Jowar* 8 to 10 lb./ac. *Tur* 10 lb /ac. (d) Cotton : 6′×2′ and *Jowar* and *Tur* : 3′×1′. (e) Cotton—4 to 5 seeds/dibble. (v) Nil. (vi) Cotton—*Suyog* ; *Jowar*—B.P.-53. *Tur*—local. (vii) Unirrigated. (viii) Nil. (ix) 33.41″. (x) Cotton—1 to 18.4.1958, *Jowar*—27.2.1956. and *Tur*—12.4.1958.

2. TREATMENTS :

Same as in expt. no. 54(68) on page 399.
F.Y.M. applied on 5.5.1957 and P_2O_5 on 9.9.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 46. (b) N.A. (iii) 6. (iv) (a) For treatments 1 to 11 : 31′×30′ ; for treat. 12 : 62′×30′. (b) For treat. I to 11 : 22′×18′ ; for treat. 12 : 50′×18′. (v) 6′ on either side, 6′ on one end and 3′ on the other. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of pink boll worm and spotted boll worm on cotton. (iii) Seed cotton, *jowar* and *tur* grain. (iv) (a) 1948—contd. (modified in 1951 and 1954). (b) As per rotations. (c) Nil. (v) (a) Jalgaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 538 lb /ac. (ii) 76.79 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Rotation no. :	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)	(12)
Crop :	Cm	C	Cm	Cm	C	C	Cm	Cm	Cm	Cm	Cm	C
Pre. crop :	Cm	Cm	C	J	T	Tm	T	Tm	T	Tm	J	J+T
Av. yield	653	515	595	740	381	340	445	433	549	502	792	510

S.E./mean =31.35 lb./ac.

II. Jowar

(i) 1015 lb./ac. (ii) 163.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Rotation no. :	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(11)	(11)	(12)
Crop :	Jm	J	Jm	J	J	J	Jm	Jm	J	J	J	J+T
Pre. crop :	Jm	Jm	J	Cm	T	Tm	T	Tm	Cm	T	Tm	C
Av. yield	1255	1278	1055	1511	665	551	865	874	1551	773	781	1020

S.E./mean =66.7 lb./ac.

III. Tur

(i) 439 lb./ac. (ii) 98.03 lb./ac. (iii) Effect of rotations is significant. (iv) Av. yield of grain in lb./ac.

Rotation no. Pre. crop Manures	(6) C	(7) Cm	(8) J	(9) Jm	(10) J	(11) Cm	Mean
Tm	367	442	460	417	465	465	436
T	341	412	447	419	582	456	443
Mean	354	427	453	418	524	461	439

S.E. of marginal mean of rotations =28.30 lb./ac.
S.E. of marginal mean of manures =16.34 lb./ac.
S.E. of body of table =40.02 lb./ac.

Crop :- Cotton, Jowar and Tur *(Kharif)*. **Ref :- Gj. 58(50).**
Site :- Agri. Res. Stn., Surat. Type :- 'R'.

Object :—To study the best rotation for Cotton, Jowar and Tur with and without manures.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton—20.6.1958; *Jowar*—12.8.1958. and *Tur*—12.8.1958. (iv) (a) Nil. (b) Cotton—dibbling. *Jowar* and *Tur* drilled. (c) *Jowar* 8 to 10 lb./ac. and *Tur* 10 lb./ac. (d) Cotton : 6′×2′, *Jowar* and *Tur* : 3′×1′. (e) Cotton 4-5 seeds/dibble. (v) Nil. (vi) Cotton—*Suyog* ; *Jowar*—B.P.—53 ; *Tur*—local. (vii) Unirrigated. (viii) Interculturing : for cotton 6, *Jowar* 4, *Tur* 1, weeding : for cotton 3, *Jowar* 3, *Tur* 2 ; thinning : for cotton 3, *Jowar* 2. *Tur* 1. (ix) 44.80″. (x) N.A.

2. TREATMENTS :

Same as in expt. no. 54(68) on page 399.
F.Y.M. spread on 3.6.1958 and P_2O_5 applied on 5.8.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 46. (b) N.A. (iii) 6. (iv) (a) For treatments 1 to 11 : 31′×30′ ; for treat. 12 : 62′×30′. (b) For treatment 1 to 11 : 22′×18′. For treatment 12 : 50′×18′. (v) 6′ on either side, 6′ on one end and 3′ on the other. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Boll-worm attack on cotton. (iii) Yield of seed cotton, *Jowar* and *Tur* grain. (iv) (a) 1948—contd. (modified in 1951 and 1954). (b) As per rotation. (c) Nil. (v) (a) Jalgaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 594 lb./ac. (ii) 64.49 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Rotation no. :	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)	(12)
Crop :	Cm	Cm	C	Cm	C	C	Cm	Cm	Cm	Cm	Cm	C
Pre. crop :	Cm	C	Cm	J	T	Tm	T	Tm	T	Tm	J	J+T
Av. yield	706	558	764	931	426	385	436	425	498	503	1029	471

S.E./mean =26.33 lb./ac.

II. Jowar

(i) 831 lb./ac. (ii) 145.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Rotation no. :	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(11)	(11)	(12)
Crop :	Jm	Jm	J	J	J	J	Jm	Jm	J	J	J	J+T
Pre. crop :	Jm	J	Jm	Cm	T	Tm	T	Tm	Cm	T	Tm	C
Av. yield	1262	1090	1061	1091	479	488	607	687	1322	556	598	731

S.E./mean =59.3 lb./ac.

III. Tur

(i) 230 lb./ac. (ii) 49.95 lb./ac. (iii) Effect of rotations is significant. (iv) Av. yield of grain in lb./ac.

Rotation no.	(6)	(7)	(8)	(9)	(10)	(11)	
Pre. crop Manures	C	Cm	J	Jm	J	Cm	Mean
Tm	197	234	247	231	301	221	238
T	190	223	220	211	272	211	221
Mean	194	228	233	221	286	216	230

S.E. of marginal mean of rotation =14.42 lb./ac.
S.E. of marginal mean of manure = 8.32 lb./ac.
S.E. of body of table =20.39 lb./ac.

Crop :- Cotton, Jowar and Tur *(Kharif)*. **Ref :- Gj. 59(30).**

Site :- Agri. Res. Stn , Surat. **Type :- 'R'.**

Object :—To study the best rotation for Cotton, Jowar and Tur with and without manures.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton—26.6.1959, *jowar*—18.8.1959 and *tur*—18.8.1959. (iv) (a) N.A. (b) Cotton dibbled. *Jowar* and *tur*—drilled. (c) *Jowar* 8.10 lb./ac. *Tur* 10 lb./ac. (d) Cotton : 6′×2′, *jowar* and *tur* : 3′×1′. (e) Cotton: 4 to 5 seeds/dibble. (v) Nil. (vi) Cotton—*suyog* ; *jowar*—B.P. 53 ; *tur*—local. (vii) Unirrigated. (viii) 2 interculturings, 2 weedings. (ix) 70.77″. (x) Cotton—2.4.1960 and 26.4.1960 *jowar*—6.3.1960, *tur*—23.4.1960.

2. TREATMENTS :

Same as in expt. no. 54(68) on page 399.

3. DESIGN :

(i) R.B.D. (ii) (a) 46. (b) N.A. (iii) 6. (iv) (a) For treatments 1 to 11 : 31′×30′, treat. 12 : 62′×30′. (b) For treatments 1 to 11 : 22′×18′, treat. 12 : 50′×18′. (v) 6′ on either sides. 6′ on one side and 3′ on the other. (vi) Yes.

4. GENERAL :

(i) Uneven growth due to heavy and continuous rains. (ii) Nil. (iii) Yield of seed cotton, *jowar* and *tur* grain. (iv) (a) 1948—contd. (modified in 1951 and 1954). (b) As per rotations. (c) Nil. (v) (a) Jalgaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Cotton

(i) 629 lb./ac. (ii) 79.39 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in lb./ac.

Rotation no.	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)	(12)
Crop :	Cm	C	Cm	Cm	C	C	Cm	Cm	Cm	Cm	Cm	C
Pre. crop :	Cm	Cm	C	J	T	Tm	T	Tm	T	Tm		J+T
Av. yield	800	545	698	905	386	436	474	536	1063	480	512	713

S.E./mean =32.41 lb./ac.

II. Jowar

(i) 598 lb./ac. (ii) 63.32 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Rotation no. :	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(11)	(11)	(12)
Crop :	Jm	J	Jm	J	J	J	Jm	Jm	J	J	J	J+T
Pre. crop :	Jm	Jm	J	Cm	T	Tm	T	Tm	Cm	T	Tm	C
Av. yield	921	788	829	862	339	368	417	447	820	355	390	642

S.E./mean =25.81 lb./ac.

III. Tur

(i) 171 lb./ac. (ii) 38.36 lb./ac. (iii) Effect of rotations is significant. (iv) Av. yield of grain in lb./ac.

Rotation no.	(6)	(7)	(8)	(9)	(10)	(11)	
Pre. crop Manures	C	Cm	J	Jm	J	Cm	Mean
Tm	129	166	192	190	192	160	172
T	153	151	182	184	190	162	170
Mean	141	158	187	187	191	161	171

S.E. of marginal mean of rotation =11.07 lb./ac.
S.E. of marginal mean of manure = 6.39 lb./ac.
S.E. of body of table =15.66 lb./ac.

Crop :- Bajra and Groundnut *(Kharif)*. **Ref :- Gj. 55(8).**
Site :- Agri. Res. Stn., Amreli. **Type :- 'X'.**

Object :—To study the suitablity of cereal and legume mixed cropping.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.8.1955. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) 3 interculturings and 2 weedings. (ix) 15.32". (x) 22.11.1955.

2. TREATMENTS :

1. Groundnut alone.
2. *Bajra* alone.
3. Separate rows of groundnut and *bajra* in 2 : 1 proportion.
4. Separate rows of groundnut and *bajra* in 4 : 1 proportion.
5. Separate rows of groundnut and *bajra* in 6 : 1 proportion.
6. Separate rows of groundnut and *bajra* in 8 : 1 proportion.
7. Separate rows of groundnut and *bajra* in 10 : 1 proportion.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) 68'×52½' (1 and 2), 69'×13½' (3 to 7). (b) 60'×52½. (1 and 2) and 60'×10½' (3 to 7). (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 139.6 Rs./ac. (ii) 20.10 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7
Av. value	153.5	88.7	63.6	101.6	144.2	195.3	230.6

S.E./mean =14.21 Rs./ac.

Crop :- Bajra and Groundnut *(Kharif)*. **Ref :- Gj. 56(11).**
Site :- Agri. Res. Stn., Amreli. **Type :- 'X'.**

Object:—To study the suitability of cereal and legume mixed cropping.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 7, 8.7.1956. (iv) (a) N.A. (b) Hand sowing and drilling. (c) 5 lb./ac. (*Bajra*) and 50 lb./ac. (groundnut). (d) 18″ between rows (1 to 6 and 8), 36″ between rows (7). (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Bajra*—M.S. and groundnut—AH—32. (vii) Unirrigated. (viii) 2 interculturings and 3 weedings. (ix) 26.98″. (x) 19.10.1957.

2. TREATMENTS :

1. Separate rows of *bajra* and groundnut in 1 : 1 proportion.
2. Separate rows of *bajra* and groundnut in 1 : 2 proportion.
3. Separate rows of *bajra* and groundnut in 1 : 3 proportion.
4. Mixed seed of *bajra* and groundnut in 1 : 1 proportion.
5. Mixed seed of *bajra* and groundnut in 1 : 2 proportion.
6. Mixed seed of *bajra* and groundnut in 1 : 3 proportion.
7. *Bajra* alone.
8. Groundnut alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 33′×21′. (b) 30′×18′. (v) 1.5′ alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) 1st year of the experiment. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 232.4 Rs./ac. (ii) 40.34 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	249.9	243.4	244.0	226.5	247.7	190.0	149.4	308.6

S.E./mean =20.17 lb./ac.

Crop :- Bajra and Groundnut ***(Kharif)*****.** **Ref :- Gj. 57(4).**

Site :- Agri. Res. Stn., Amreli. **Type :- 'X'.**

Object :—To study the suitability of cereal and legume mixed cropping.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* fodder. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 1.7.1957. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling and hand sowing. (c) N.A. (d) 18″ between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Bajra*—M.S. and groundnut—AH—32. (vii) Unirrigated. (viii) 3 interculturings. (ix) 27.42″. (x) 9.10.1957.

2. TREATMENTS :

1. Separate rows of *bajra* and groundnut in 1 : 1 proportion.
2. Separate rows of *bajra* and groundnut in 1 : 2 proportion.
3. Separate rows of *bajra* and groundnut in 1 : 3 proportion.
4. *Bajra* alone.
5. Groundnut alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 94′×21′. (b) 90′×18′. (v) 2′×1.5′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (modified in 1957). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 194.4 Rs./ac. (ii) 20.17 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5
Av. value	194.8	202.3	209.5	149.7	215.7

S.E./mean =10.08 Rs./ac.

Crop :- Wheat and Gram *(Rabi).* **Ref :- Gj. 56(3).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'X'.**

Object :—To study the suitability of cereal and legume mixed cropping.

1. BASAL CONDITIONS :

(i) (a) Wheat, Gram—Gram, Wheat. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 29.10.1956. (iv) (a) 5 harrowings. (b) Drilling. (c) 40 lb./ac. for cereal and 20 lb./ac. for legume. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Chafa gram, wheat—A 206. (vii) Unirrigated (viii) 1 weeding. (ix) 39". (x) N.A.

2. TREATMENTS :

1. Legume alone (Gram).
2. Cereal alone (Wheat).
3. Mixed seed of legume and cereal in 1 : 1 proportion.
4. Mixed seed of legume and cereal in 2 : 1 proportion.
5. Mixed seed of legume and cereal in 3 : 1 proportion.
6. Separate rows of legume and cereal in 1 : 1 proportion.
7. Separate rows of legume and cereal in 2 : 1 proportion.
8. Separate rows of legume and cereal in 3 : 1 proportion.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 30'×46'. (b) 24'×40'. (v) 3' alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958 (modified in 1954). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 115.2 Rs./ac. (ii) 15.72 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	155.7	48.8	142.5	109.1	110.9	139.3	116.7	98.5

S.E./mean =7.86 Rs./ac.

Crop :- Wheat and Gram *(Rabi).* **Ref :- Gj. 57(1).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'X'.**

Object :—To study the suitability of cereal and legume mixed cropping.

1. BASAL CONDITIONS :

(i) (a) Wheat, Gram—Wheat, Gram. (b) N.A. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 13.10.1957. (iv) (a) 6 harrowings. (b) Drilling. (c) 20 lb./ac. (gram) and 40 lb./ac. (wheat). (d) 12" between rows. (e) N.A. (v) Nil. (vi) Chafa gram, wheat—A-206. (vii) Unirrigated (viii) 1 weeding. (ix) 18.37". (x) 19.2.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(3) above.

4. GENERAL :

(i) Poor due to scanty rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958 (modified in 1954). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 55.00 Rs./ac. (ii) 9.08 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	44.24	77.48	61.82	51.73	46.06	53.32	55.70	49.69

S.E./mean =4.54 Rs./ac.

Crop :- Wheat and Gram *(Rabi)*. **Ref :- Gj. 58(1).**

Site :- Agri. Res. Stn., Arnej. **Type :- 'X'.**

Object :—To study the suitability of cereal and legume mixed cropping.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 9.11.1958. (iv) (a) N.A. (b) Drilling. (c) 20 lb./ac. (gram), 40 lb./ac. (wheat). (d) 12″ between rows: (e) N.A. (v) Nil. (vi) Chafa gram, wheat A—206. (vii) Unirrigated. (viii) Nil. (ix) 32.4″. (x) 11.3.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(3) on page 407.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958 (modified in 1954). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 116.6 Rs./ac. (ii) 36.86 Rs./ac. (iii) Treatment differences are significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	72.9	130.7	170.3	131.7	96.6	126.3	106.9	97.3

S.E./mean =18.43 Rs./ac.

Crop :- Cotton with Paddy, Groundnut, Sann and Chillies *(Kharif)*. **Ref :- Gj. 59(140).**

Site :- Trial-cum-Demonstration Farm, Bardoli. **Type :- 'X'.**

Object :—To find out the most economic inter-crop that can be grown with Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Indo-American Cotton trial. (c) 40 lb./ac. of N+20 lb./ac. of P_2O_5. (ii) (a) Clay loam. (b) Refer soil analysis, Bardoli. (iii) 10.7.1959 (groundnut), 29.6.1959 (cotton), 13.7.1959, 15.7.9159. (chillies), 10.7.1959 (paddy) 10.9.1959 (sann). (iv) (a) N A. (b) Dibbling (cotton), drilling (paddy, groundnut and sann), planting (chillies) (c) N.A. (d) 5′×2′ cotton. (e) 2 to 3 seeds/dibble. (v) 40 lb./ac. of N as A/S and castor cake and 20 lb./ac. of P_2O_5. (vi) 20-87 (cotton), (paddy) *Sathi* 34-36 AH—32 (groundnut). (vii) Irrigated. (viii) 3 weedings and 7 interculturings. (ix) 99.3″. (x) 23.11.1959 (groundnut) 16, 26.3.1960, 19.4.1960, 2.5.1960 (cotton), 19.10.1959 to 4.4.1960 (chillies), 17, 19.11.1959 (paddy).

2. TREATMENTS :

1. Cotton with paddy (5 rows of paddy between cotton).
2. Cotton with groundnut (3 rows of groundnut between cotton).
3. Cotton with chillies (2 rows of chillies between cotton).
4. Cotton with sann (2 rows of sann between cotton).
5. Cotton alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 210′×48′. (iii) 5. (iv) (a) 48′×40′. (b) 36′×30′. (v) 6′×5′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Seed cotton yield, pod yield of groundnut and grain yield of paddy. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Instead of normal rain of 56″ it received 100″ this year. The crop was affected to a large extent. (vii) Nil.

5. RESULTS :

(i) 332.2 Rs./ac. (ii) 66.57 Rs./ac. (iii) Treatment differences are significant. (iv) Av. value of the produce in Rs./ac.

Treatment	1	2	3	4	5
Av. value	268.4	363.5	378.7	278.4	372.0

S.E./mean =29.76 Rs./ac.

Crop :- Jowar and Lang *(Rabi)*. **Ref :- Gj. 54(23).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'X'.**

Object :—To find out the most advantageous mixture of Jowar and Lang as mixed crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lang*. (c) Nil. (ii) (a) Black cotton. (b) N.A. (iii) *Jowar* and *lang* on 16.10.1954. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. of *lang* and 6 lb./ac. of *jowar*. (d) 24″×4″. (e) N.A. (v) Nil. (vi) *Jowar* No.—8 ; *lang* T—2-12. (vii) Unirrigated. (viii) 1 thinning and 1 interculturing. (ix) N.A. (x) *Lang* on 10.1.1955 and *jowar* on 3.3.1955.

2. TREATMENTS :

A. *Lang* alone.
B. *Jowar* alone.
C. 2 rows of *Lang*+1 row of *Jowar*.
D. 4 rows of *Lang*+1 row of *Jowar*.
E. 6 rows of *Lang*+1 row of *Jowar*.
F. 8 rows of *Lang*+1 row of *Jowar*.
G. 10 rows of *Lang*+1 row of *Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 42′×30′ for A, B, C and E, 40′×30′ for D, 36′×30′ for F and 44′×30′ for G. (b) 40′×30′ for A, B, C and E, 38′×30′ for D, 34′×30′ for F and 42′×30′ for G. (v) 1′ on either side. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 48.35 Rs./ac. (ii) 23.29 Rs./ac. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs./ac.

Treatment	A	B	C	D	E	F	G
Av. value	47.19	63.70	62.26	39.22	42.10	45.27	38.72

S.E./mean =16.47 Rs./ac.

Crop :- Jowar and Lang *(Rabi)*. **Ref :- Gj. 55(10).**

Site :- Agri. Res. Stn., Bhuwa. **Type :- 'X'.**

Object :—To find out the most advantageous mixture of Jowar and Lang as a mixed crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lang*. (c) Nil. (ii) (a) Black cotton. (b) N.A. (iii) *Jowar* and *lang* on 17.10.1955. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. of *lang* and 6 lb./ac. of *jowar*. (d) 24″×4″. (e) N.A. (v) Nil. (vi) *Jowar* No. 8 ; *lang* T—2.12. (vii) Unirrigated. (viii) 1 thinning and 1 weeding. (ix) 31.65″. (x) *Jowar* on 3.2.1956 and *lang* on 5.3.1956.

2. TREATMENTS :

A. *Lang* alone.
B. *Jowar* alone.
C. 2 rows of *Lang*+1 row of *Jowar*.
D. 4 rows of *Lang*+1 row of *Jowar*.
E. 6 rows of *Lang*+1 row of *Jowar*.
F. 8 rows of *Lang*+1 row of *Jowar*.
G. 10 rows of *Lang*+1 row of *Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 42′×30′ for A, B, C, and E ; 40′×30′ for D ; 36′×30′ for F and 44′×30′ for G. (b) 40′×30′ for A, B, C and E ; 38′×30′ for D ; 34′×30′ for F and 42′×30′ for G. (v) 1′ on either side. (vi) Yes.

4. GENERAL :

(i) *Jowar* crop failed and *lang* was normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) N.A.

5. RESULTS :

(i) 89.0 Rs./ac. (ii) 10.27 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	A	B	C	D	E	F	G
Av. value	111.4	33.8	65.5	92.6	98.9	111.4	109.6

S.E./mean =5.14 Rs./ac.

Crop :- Cotton and Paddy. **Ref :- Gj. 54(31).**
Site :- Agri. Res. Stn., Dabhoi. **Type :- 'X'.**

Object :—To find out N and P requirements with and without F.Y.M. of Cotton and Paddy drilled between two cotton lines.

1. BASAL CONDITIONS :

(i) (a) Cotton after *Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 11.6.1954 for cotton and 5.7.1954 for paddy. (iv) (a) N.A. (b) Drilling. (c) 12 lb./ac (d) 6′ between rows and 2 between plants for cotton. (e) 3-4 seeds/dibble. (v) Nil. (vi) *Vijay* for cotton, *Sarice* for paddy. (vii) Unirrigated. (viii) 5 weedings, 7 interculturings .Gap filling on 24.6.1954 and thinning of cotton on 12.7.1954. (ix) 41.92″. (x) 29.10.1954. for paddy 24.1.1955, 2.2.1955, 15.2.1955, 3.3.1955 and 5.4.1955. for cotton.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N in the form of A/S and G.N.C. in 1 : 1 ratio : N_0=0, N_1=30 and N_2=60 lb./ac.
(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=30 and P_2=60 lb./ac.
(3) 2 levels of F.Y.M. : F_0=0 and F_1=5 C.L./ac.

F.Y.M. was applied on 8.7.1954. $P_2O_5+\frac{1}{2}$ dose of N was applied on 24.7 1954. 2nd half dose of N was applied on 20.8.1954.

3. DESIGN :

(i) $3^2\times2$ fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 62′×36′. (b) 50′×24′. (v) 6′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) The stand of both the crops was very good. But heavy rains in September caused severe lodging of cotton crop. (ii) Nil. (iii) Weight of cotton, paddy and grain. (iv) (a) 1952—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I Paddy

(i) 266.9 lb./ac. (ii) 60.98 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	132.7	307.4	297.2	245.8	239.7	251.8
P_1	140.7	232.6	353.9	242.4	223.1	261.7
P_2	179.2	307.4	450.4	312.3	307.8	316.9
Mean	150.9	282.5	367.2	266.9	256.9	276.8
F_0	141.4	273.0	356.2			
F_1	160.3	291.9	378.1			

S.E. of marginal mean of N or P =12.45 lb./ac.
S.E. of marginal mean of F =10.16 lb./ac.
S.E. of body of N×P table =21.56 lb./ac.
S.E. of body of N×F or P×F table =17.60 lb./ac.

II Cotton

(i) 522.0 lb./ac. (ii) 107.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	437.5	536.6	536.2	503.4	506.1	500.7
P_1	444.9	506.8	610.7	520.8	509.1	532.4
P_2	547.5	569.5	508.1	541.7	530.1	553.3
Mean	476.6	537.6	551.7	522.0	515.1	528.8
F_0	465.9	532.9	546.6			
F_1	487.3	542.3	556.8			

S.E. of marginal mean of N or P =21.9 lb./ac.
S.E. of marginal mean of F =17.8 lb./ac.
S.E. of body of N×P table =37.9 lb./ac.
S.E. of body of N×F or P×F table =30.9 lb./ac.

Crop :- Cotton and Paddy *(Kharif)*. **Ref :- Gj. 55(17).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'X'.**

Object :—To find out the N, P requirements with and without F.Y.M. on Cotton and Paddy drilled in between two cotton lines.

1. BASAL CONDITIONS :

(i) *Jowar*—Cotton, Paddy. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) Cotton : 16.6.1955 ; paddy : 18.6.1955. (iv) (a) N.A. (b) Paddy—drilling ; cotton—dibbling. (c) Paddy—12 lb./ac. (d) Cotton : 6′×2′ ; paddy drilled between two lines of cotton which are 6′ apart. (e) Cotton : 3-4 and thinned to 1 plant/hill. (v) Nil. (vi) Cotton : *Vijay* ; paddy : *Sarice*. (vii) Irrigated. (viii) 2 thinnings for cotton, 5 weedings and 8 interculturings. (ix) 51.18″. (x) Cotton : 5 pickings from 13.2.1956 to 8.4.1956 ; paddy : 15, 16.10.1955.

2. TREATMENTS

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S and G.N.C. in 1 : 1 ratio : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac. of P_2O_5.
(3) 2 levels of F.Y.M. : $F_0=0$ and $F_1=5$ C.L./ac.

F.Y.M. applied on 14.7.1955, $P_2O_5+\frac{1}{2}$ N applied on 22.7.1955 and $\frac{1}{2}$ N applied on 26.8.1955.

3. DESIGN :

(i) $3^2\times2$ fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 62′×36′. (b) 50′×24′. (v) 6′×6′. (vi) Yes.

4. GENERAL :

(i) Very good but due to heavy rains in August and September cotton crop suffered badly. (ii) Mild attack of stem borer. (iii) *Kapas*, grain and straw yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

I Paddy

(i) 480.5 lb./ac. (ii) 129.5 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	292.6	461.0	689.2	480.9	477.2	484.8
P_1	258.5	518.9	615.9	464.4	466.7	462.2
P_2	313.9	529.3	645.6	496.2	529.0	463.4
Mean	288.3	503.1	650.2	480.5	491.0	470.1
F_0	266.4	533.5	673.0			
F_1	310.2	472.7	627.5			

S.E. of marginal mean of N or P =26.4 lb./ac.
S.E. of marginal mean of F =21.6 lb./ac.
S.E. of body of N×P table =45.8 lb./ac.
S.E. of body of N×F or P×F table =37.4 lb./ac.

II Cotton

(i) 345.2 lb./ac. (ii) 97.06 lb /ac. (iii) Main effect of N and interaction NPF are highly significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	386.6	393.2	274.5	351.4	368.2	334.7
P_1	412.5	374.0	334.7	373.7	407.1	340.3
P_2	384.6	286.9	259.2	310.2	303.4	317.1
Mean	394.6	351.4	289.5	345.2	359.6	330.7
F_0	402.6	372.6	303.5			
F_1	386.5	330.1	275.5			

S.E. of marginal mean of N or P =19.81 lb./ac.
S.E. of marginal mean of F =16.18 lb./ac.
S.E. of body of N×P table =34.32 lb./ac.
S.E. of body of N×F or P×F table =28.02 lb./ac.

Crop :- Cotton and Paddy. **Ref :- Gj. 57(106).**

Site :- Agri. Res. Stn., Dabhoi. **Type :- 'X'.**

Object :—To find out N and P requirements with and without F.Y.M. for Cotton and Paddy drilled between two lines of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 25.6.1957 (Cotton), 27.6.1957 (Paddy). (iv) (a) N.A. (b) Cotton-dibbling and Paddy-drilling. (c) 12 lb./ac. (Paddy). (d) 6′ for cotton and 2′ for paddy between rows. (e) 3 to 4 seeds/dibble. (v) Nil. (vi) Cotton : *Digvijay*, Paddy : *Dhundhani*. (vii) Irrigated. (viii) 5 weedings. (ix) 56.95″. (x) 23.12.1957, 10, 25.1.1958 and 14.2.1958 (cotton) ; 29 and 30.10 1957 (Paddy).

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S+G.N.C. in the ratio of 1 : 1 : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.
(2) 3 levels of P as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.
(3) 2 levels of F.Y.M. : $F_0=0$ and $F_1=5$ C.L./ac.

Super applied in two equal doses one on 17.8.1957 and other on 3.9.1957.

3. DESIGN :

(i) $3^2\times2$ Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 62′×36′. (b) 50′×24′. (v) 6′ alround. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Heavy attack of cotton boll-worm on cotton. (iii) Seed cotton, paddy grain and fodder. (iv) (a) 1952—1957 (failed in 1956). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Due to late rains both the crops were affected badly. (vii) Nil.

5. RESULTS :

A. Cotton

(i) 481.8 lb./ac. (ii) 99.82 lb./ac. (iii) Main effect of P and interaction P×F are significant. Interaction N×P×F is highly significant. (iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	512.5	518.1	496.7	509.1	531.7	486.5
P_1	438.1	529.6	535.7	501.1	492.1	510.2
P_2	389.3	479.9	436.4	435.2	439.2	431.2
Mean	446.6	509.2	489.6	481.8	487.7	475.9
F_0	473.3	475.5	514.0			
F_1	420.0	542.6	465.2			

S.E. of P or N marginal mean =20.38 lb./ac.
S.E. of F marginal mean =16.64 lb./ac.
S.E. of body of P×N table =35.29 lb./ac.
S.E. of body of P×F or N×F table =28.82 lb./ac.

B. Paddy

(i) 201.9 lb./ac. (ii) 49.73 lb./ac. (iii) Only N effect is highly significant. (iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	149.1	205.5	273.7	209.4	197.1	221.8
P_1	161.1	224.9	233.1	206.3	224.0	188.7
P_2	174.9	176.4	218.9	190.1	196.3	183.8
Mean	161.7	202.2	241.9	201.9	205.8	198.1
F_0	155.3	222.2	239.8			
F_1	168.0	182.3	244.0			

S.E. of P or N marginal mean =10.15 lb./ac.
S.E. of F marginal mean = 8.29 lb./ac.
S.E. of body of P×N table =17.58 lb./ac.
S.E. of body of P×F or N×F table =14.36 lb./ac.

Crop :- Groundnut—Maize. **Ref :- Gj. 54(36).**

Site :- Agri. Res. Stn., Dohad. **Type :- 'X'.**

Object :—To find out whether mixed cropping is better as compared to single cropping of legume and cereal in different proportions.

1. BASAL CONDITIONS :

(i) (a) Maize in *kharif* and gram in *rabi*. (b) Maize and gram. (c) Maize was manured with 5 C.L./ac. of F.Y.M. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) N.A. (iv) (a) 2 ploughings. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 interculturings. (ix) 46.23″. (x) N.A.

2. TREATMENTS :

1. Groundnut alone.
2. Maize alone.
3. Groundnut and maize in the ratio of 2 : 1 rows.
4. Groundnut and maize in the ratio of 4 : 1 rows.
5. Groundnut and maize in the ratio of 6 : 1 rows.
6. Groundnut and maize in the ratio of 8 : 1 rows.
7. Groundnut and maize in the ratio of 10 : 1 rows.

3. DESIGN :

(i) R B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 30′×36′. (b) 26′×30′. (v) One row on either side and 3′ at each end. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and pod yield. (iv) (a) 1952—1955 (modified in 1952). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 57.09 Rs./ac. (ii) 14.78 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7
Av. value	85.73	5.59	73.44	60.04	49.15	54.73	70.93

S.E./mean =10.45 lb./ac.

Crop :- Groundnut and maize. **Ref :- Gj. 55(23).**

Site :- Agri. Res. Stn., Dohad. **Type :- 'X'.**

Object :—To find out whether mixed cropping is better as compared to single cropping of legume and cereal in different proportions.

1. BASAL CONDITIONS :

(i) (a) Maize in *kharif* and gram in *rabi*. (b) Maize and gram. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) N.A. (iv) (a) 2 ploughings. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) *Spanish* No—5 for groundnut, *Gomati* for maize. (vii) Unirrigated. (viii) 3 weedings and 2-3 interculturings. (ix) 32.50″. (x) N.A.

2. TREATMENTS :

1. Groundnut alone.
2. Maize alone.
3. Groundnut and maize in the ratio of 2 : 1 rows.

4. Groundnut and maize in the ratio of 4 : 1 rows.
5. Groundnut and maize in the ratio of 6 : 1 rows.
6. Groundnut and maize in the ratio of 8 : 1 rows.
7. Groundnut and maize in the ratio of 10 : 1 rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 30′×36′. (b) 26′×30′. (v) 2′ on either side and 3′ at either end of the rows. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Pod and grain yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 200.5 Rs./ac. (ii) 25.60 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7
Av. value	124.0	304.1	233.4	192.4	200.2	177.0	172.6

S.E./mean =18.10 Rs./ac.

Crop :- Groundnut and Cotton *(Kharif)*. **Ref :- Gj. 59(18).**

Site :- Agri. Res. Stn., Halvad. **Type :- 'X'.**

Object: —To study the economics of mixed cropping of groundnut and cotton as compared to that of sowing each crop separately.

1. BASAL CONDITIONS :

(i) (a) Legume—Cereal. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Halvad. (iii) 4.7.1959. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) Groundnut : 60 lb./ac. ; Cotton : 10 lb./ac. (d) As per treatments. (e) 2 to 3 seeds/dibble. (v) 10 C.L./ac. of compost broadcast. (vi) Cotton : Co_2—170 ; Grounduut : AK—12-24. (vii) Irrigated. (viii) 3 weedings and 3 interculturings. (ix) 34″. (x) Groundnut : 20.10.1959 ; Cotton : 7.11.1959.

2. TREATMENTS :

1. Groundnut alone with 2′ spacing.
2. Cotton alone with 6′ spacing.
3. Cotton alone with 3′ spacing.
4. Cotton with 6′ spacing+1 row of Groundnut.
5. Cotton with 6′ spacing+2 rows of Groundnut.
6. Cotton with 6′ spacing+3 rows of Groundnut.

3 DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 40′×36′. (b) 34′×24′. (v) As per spacings. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Light attack of grass-hoppers, flies, aphids and jassids, pod-borers, black-arm and red leaf disease. Spraying of Endrine twice on cotton. (iii) *Kapas* and pod yield. (iv) (a) 1959—contd. (b) —. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 198.5 Rs./ac. (ii) 30.20 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6
Av. value	122.9	213.1	205.7	215.8	219.0	214.3

S.E./mean =15.10 Rs./ac.

Crop :- Bajra and Groundnut *(Kharif)*. **Ref :- Gj. 59(137).**

Site :- Agri. Res. Stn., Jamnagar. **Type :- 'X'.**

Object :—To study the effect of mixed cropping of Bajra and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 8.7.1959. (iv) (a) 2 harrowings. (b) Drilling. (c) N.A. (d) 18″ between rows. (e) —. (v) Nil. (vi) *Bajra* : L—11 ; Groundnut : AK—12-24. (vii) Unirrigated. (viii) 2 interculturings and 2 weedings. (ix) 31.26″. (x) *Bajra* : 5.11.1959, Groundnut : 4.11.1959.

2. TREATMENTS :

1. *Bajra* alone.
2. Groundnut alone.
3. One row *Bajra*+one row Groundnut.
4. One row *Bajra*+two rows Groundnut.
5. One row *Bajra*+three rows Groundnut.
6. Two rows *Bajra*+ one row Groundnut.
7. Three rows *Bajra*+one row Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 48′×24′. (b) 42′×18′. (v) 3′×3′. (vi) Yes.

4. GENERAL :

(i) Groundnut : satisfactory ; *Bajra* : very poor. (ii) Nil. (iii) *Bajra* : grain yield and Groundnut : pod yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) *Bajra* crop suffered badly due to excessive rains. (vii) Nil.

5. RESULTS :

(i) 111.8 Rs./ac. (ii) 15.90 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of the produce in Rs./ac.

Treatment	1	2	3	4	5	6	7
Av. value	5.62	198.36	108.90	144.77	174.88	74.33	76.06

S.E./mean =7.95 Rs./ac.

Crop :- Cotton-Groundnut *(Kharif)*. **Ref :- Gj. 59(24).**

Site :- Agri. Res. Stn., Jamnagar. **Type :- 'X'.**

Object :—To find out the economy of mixed cropping of Cotton and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Clayey loam to medium black. (b) N.A. (iii) N.A. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 30″. (x) N.A.

2. TREATMENTS :

1. Cotton alone—3′ spacing.
2. Cotton alone—6′ spacing.
3. Grondnut alone.
4. Cotton 3′ spacing and groundnut one line.
5. Cotton 6′ spacing 2 lines of groundnut.
6. Cotton 6′ spacing 3 lines of groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 120′×108′. (iii) 4. (iv) (a) 40′×36′. (b) 34′×30′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* and pod yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS

(i) 182.5 Rs./ac. (ii) 18.61 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6
Av. value	96.19	108.90	242.25	207.98	189.08	250.04

S.E./mean =9.30 lb./ac.

Crop :- Cotton, Castor and Groundnut *(Kharif)*. **Ref :- Gj. 55(44).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'X'.**

Object :—To find out the most remunerative mixed cropping in this tract for Cotton, Castor and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black and loamy soil. (b) Refer soil analysis, Junagadh. (iii) Groundnut : 3.7.1955, castor : 6.8.1955 and cotton : 5.8.1955. (iv) (a) No ploughing and 2 to 3 harrowings. (b) Dibbling (for all crops). (c) N.A. (d) Between rows—3′ (for all crops) ; between plants—2″ for groundnut, 6″ for cotton and 12″ for castor. (e) One for groundnut and castor and 2 to 3 for cotton thinned out to one. (v) 5 C.L./ac. of F.Y.M. in furrows applied 15 days before sowing. (vi) Groundnut-Punjab (spreading type) ; cotton-*Kalyan* and castor J-3. (vii) Unirrigated. (viii) Two interculturings and three weedings. (ix) 21.93″. (x) Groundnut : 21.11.1955, castor : 24.2.1956 and cotton : 24.2.1956.

2. TREATMENTS :

1. Groundnut alone.
2. Castor alone.
3. Cotton alone.
4. 1 row of groundnut and one row of castor.
5. 1 row of groundnut and one row of cotton.
6. 1 row of cotton and one row of castor

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 40′×36′. (b) 34′×24′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) 2 to 3% *tikka* attack on groundnut and attack of semi-looper on castor. (iii) *Kapas* seed and pod yield. (iv) (a) 1952-1957 (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 147.4 Rs./ac. (ii) 28.52 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of produce in Rs./ac.

Treatment	1	2	3	4	5	6
Av. yield	116.5	169.4	192.5	194.6	113.3	98.3

S.E./mean =11.64 Rs./ac.

Crop :- Cotton, Castor and Groundnut *(Kharif)*. **Ref :- Gj. 56(51).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'X'.**

Object :—To find out the most remunerative mixed cropping in this tract for the crops Cotton, Castor and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black-2′ to 2½′ deep. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 2-3 harrowings. (b) Dibbling for all crops. (c) N.A. (d) Between rows : 3′ for all crops; between plants : 2″ for groundnut 6″ for cotton and 12″ for castor. (e) 1 seed/dibble for groundnut and castor; 2-3 seeds/dibble for cotton. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Groundnut-Punjab-1 (spreading type); cotton-*Kalyan* and castor-T_3. (vii) Unirrigated. (viii) (ix) 59.56″. (x) N.A.

2. TREATMENTS :

   1. Groundnut alone.
   2. Castor alone.
   3. Cotton alone.
   4. 1 row of groundnut and one row of castor.
   5. 1 row of groundnut and one row of cotton.
   6. 1 row of cotton and one row of castor.

3. DESIGN :

   (i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 40′×36′. (b) 34′×24′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

   (i) N.A. (ii) Cotton—nil, castor—semi-looper and groundnut—aphids and *tikka.* (iv) (a) 1952-1957. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

   (i) 113.33 Rs./ac. (ii) 21.99 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. money value of produce in Rs./ac.

Treatment	1	2	3	4	5	6
Av. value	97.33	111.03	88.34	170.29	129.27	95.64

S.E./mean =8.98 Rs./ac.

Corp :-Cotton, Castor & Groundnut *(Kharif)* **Ref :-Gj. 57(59)**

Site :- Central Expt. Stn., Junagadh. **Type :- 'X'**

Object :—To find out the most remunerative mixed cropping in this tract for Cotton, Castor and Groundnut.

1. BASAL CONDITIONS :

   (i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black 2′ to 2½′ deep. (b) Refer soil analysis, Junagadh. (iii) Groundnut : 19.7.1957, Cotton : 19.7.1957 and Castor 19.7.1957. (a) No ploughing. (b) Dibbling. (c) N.A. (d) Between rows—3′ ; between plants—2″ for Groundnut, 6″ for cotton and 12″ for for Castor (e) One for groundnut & Castor and 2 to 3 for cotton thinned out to one. (v) 5. C.L./ac. of F.Y.M. in furrows 15 days before sowing. (vi) Groundnut—Punjab—(Spreading type) ; Cotton—*Kalyan* and Castor—T_3. (vii) Unirrigated. (viii) Two interculturings and three weedings. (ix) 30.2″. (x) Groundnut : 23.11.1957. Cotton : 18.1.1958, 20.2.1958, 8.4.58 and Castor : Feb. to April 1958.

2. TREATMENTS :

   1. Groundnut alone.
   2. Castor alone.
   3. Cotton alone.
   4. 1 row of Groundnut and one row of Castor.
   5. 1 row of Groundnut and one row of Cotton.
   6. 1 row of cotton and one row of Castor.

3. DESIGN :

   (i) L. Sq. (ii) (a) 6. (b) N. A. (iii) 6. (iv) (a) 40′×36′. (b) 24′×34′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

   (i) Groundnut was normal but yield was affected adversely due to lack of rains in August. (ii) Semi-looper attack on Castor and aphids and *tikka* attack on groundnut. (iii) Grain and fodder yield. (iv) 1952—1957 (modified in 1955). (b) No. (c) Nil. (v) (a) & (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

   (i) 94.84 Rs./ac. (ii) 36.57 Rs./ac. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6
Av. value	103.56	97.15	104.09	96.35	99.02	68.86

S.E./mean =14.93 Rs./ac.

Crop :- Cotton, Castor and Groundnut *(Kharif)*. **Ref :- Gj. 58(42).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'X'.**

Object :—To find out the most remunerative mixed cropping in this tract for Groundnut, Cotton and Castor.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Black loamy soil. (b) Refer soil analysis, Junagadh. (iii) 9.7.1958. (iv) (a) 1 harrowing before sowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Groundnut : Punjab—1 (medium), Cotton : *Kalyan* and Castor : T_3. (vii) Unirrigated. (viii) 4 interculturings and 3 weedings. (ix) 34″. (x) Groundnut : 19.11.1958 ; Castor and Cotton : 6.3.1959.

2. TREATMENTS :

1. Castor alone.
2. Cotton alone.
3. Groundnut alone.
4. Groundnut one row with 1½′ spacing and castor one row with 1½′ spacing.
5. Groundnut one row with 3′ spacing and Castor one row with 3′ spacing.
6. Cotton one row with 1½′ spacing and Groundnut one row with 1½′ spacing.
7. Groudnut one row with 3′ spacing and Cotton one row with 3′ spacing.
8. Cotton one row with 3′ spacing and Castor one row with 3′ spacing.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 50′×18′. (b) 45′×12′. (v) 2.5′×3′. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of *tikka* was negligible. No control measures have been taken for groundnut or cotton. But Gammexane was dusted in early stages to control the semi-loopers. (iii) Yield of pod for groundnut, cotton bolls, and castor seed. (iv) (a) 1956—contd. (modified but year N.A.). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 154.4 Rs./ac. (ii) 42.67 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	87.1	82.1	245.6	177.5	150.9	252.1	146.8	93.4

S.E./mean =21.34 Rs./ac.

Crop :- Cotton and Groundnut *(Kharif)*. **Ref :- Gj. 54(57).**
Site :- Central Expt. Stn., Junagadh. **Type :- 'X'.**

Object :—To find out the most remunerative mixed cropping in this tract for Cotton and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra*. (c) N.A. (ii) (a) Medium black, loamy soil. (b) Refer soil analysis, Junagadh. (iii) Groundnut : 15.6.1954 ; Cotton : 30.6.1954. (iv) (a) No ploughing, 2 to 3 harrowings. (b) Dibbling (for all crops). (c) N.A. (d) Between rows—3′ for all crops ; between plants—2″ for groundnut, 6″ for Cotton. (e) One for groundnut ; 2 to 3 for cotton but thinning out to one. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) N.A. (vii) Unirrigated. (viii) 2 interculturings and 2 weedings. (ix) 38.33″. (x) Groundnut : 20.10.1954 ; Cotton : 12.1.1955.

2. TREATMENTS :

1. Groundnut alone.
2. Cotton alone.
3. 2 rows of cotton and 2 rows of Groundnut.
4. 2 rows of cotton and 6 rows of Groundnut.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 50′×48′. (b) 44′×24′. (v) 3′×12′. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) 2 to 3% attack of *tikka*. (iii) *Kapas* and pod yield. (iv) (a) 1952—1957 (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 562.4 Rs./ac. (ii) 24.05 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4
Av. value	628.8	417.6	606.8	596.4

S.E./mean =12.03 Rs./ac.

Crop :- Cotton and Groundnut ***(Kharif).*** **Ref :- Gj. 56(49).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'X'.**

Object :—To find out most remunerative mixed cropping in this tract for Cotton and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black, 2′ to 2½′ deep. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) Between rows—6′ (cotton), 2′ and 3′ (groundnut.) ; Between plants—1′ (cotton), 2″ (groundnut). (e) Groundnut—1 and cotton 2-3 but thinned out to one. (v) 5 C.L./ac. of F.Y.M. in four rows fifteen days before sowing. (vi) Groundnut : AK—12-24 (bunch type), Cotton : Co_2—170. (vii) Irrigated. (viii) 2 to 3 interculturing and 3 to 4 weedings. (ix) 59.56″. (x) N.A.

2. TREATMENTS :

1. Groundnut alone.
2. Cotton alone.
3. One row of groundnut and one row of cotton.
4. Two rows of groundnut and one row of cotton.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 40′×36′. (b) 34′×24′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) N.A. (iv) (a) 1956—contd. (modified in 1958). (b) No. (c) N. A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS

(i) 245.6 Rs./ac. (ii) 31.54 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4
Av. value	128.3	235.0	349.3	269.8

S.E./mean =15.77 Rs./ac.

Crop :- Cotton and Groundnut. **Ref. :- Gj. 57(57).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'X'.**

Object :—To find out the most remunerative mixed cropping for this tract for Cotton and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N. A. (ii) (a) Medium black, 2′ to 2½′ deep. (b) Refer soil analysis, Junagadh. (iii) Cotton : 19.7.1957 and Groundnut : 19.7.1957. (iv) (a) Two to three harrowings. (b) Dibbling for both crops. (c) N. A. (d) Between rows—6′ (cotton) ; 2′ to 3′ (groundnut). Between plants—1′ (cotton), 2″ (groundnut). (e) Groundnut—1, Cotton 2 to 3 but thinned out to 1. (v) 5 C.L./ac. of F.Y.M. in four rows fifteen days before sowing. (vi) Groundnut : AK—12-24 (bunch type) ; cotton :

Co_2—170. (vii) Irrigated. (viii) Two interculturings and 2 to 3 weedings. (ix) 30.21″. (x) Cotton : 18.1.1958, 2.2.1958, 25.2.1958, 20.3.1958 and 20.4.1958 and Groundnut : 28.10.1957.

2. TREATMENTS :

1. Groundnut alone.
2. Cotton alone.
3. One row of groundnut and one row of cotton.
4. Two rows of groundnut and one row of cotton.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N. A. (iii) 4. (iv) (a) 40′×36′. (b) 34′×24′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

(i) Normal growth but yield was adversely affected due to lack of rain in August. (ii) Aphids and *tikka* attack on groundnut. (iii) *Kapas*, pod and fodder yield. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 247.0 Rs./ac. (ii) 50.66 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4
Av. value	99.29	250.49	333 90	304.27

S.E./mean =25.33 Rs./ac.

Crop :- Cotton and Groundnut. **Ref :- Gj. 58(41).**

Site :- Central Expt. Stn., Junagadh. **Type :- 'X'.**

Object :—To find out the most remunerative mixed cropping for this tract.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Junagadh. (iii) Cotton : 30.6.1958 and groundnut : 30.6.1958. (iv) (a) One harrowing before sowing. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Cotton : Co_2—170 (medium) and groundnut : Ak—12-24 (early). (vii) Irrigated. (viii) Two weedings and 2 interculturings. (ix) 34″. (x) Cotton : 25.2.1959 and groundnut : 17.10.1958.

2. TREATMENTS :

1. Cotton alone at 3′ spacing.
2. Cotton alone at 6′ spacing.
3. Groundnut alone.
4. 1 row of cotton and 1 row of groundnut.
5. 3 rows of groundnut and 1 row of cotton.
6. 2 rows of groundnut and one row of cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 40′×36′. (b) 34′×24′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) *Tikka* attack on groundnut. Geigy 1250 and Blitox sprayed on cotton to control the leaf eating catter-piller. (iii) *Kapas* and pod yield. (iv) (a) 1956—N.A. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) and (b) Nil.

5. RESULTS :

(i) 570.4 Rs./ac. (ii) 88.99 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6
Av. value	349.1	767.9	566.9	505.0	584.9	648.5

S.E./mean =44.50 Rs./ac.

Crop :- Jowar and Tur *(Kharif)*. **Ref :- Gj. 54(67).**

Site :- Agri. Res. Stn., Surat. **Type :- 'X'.**

Object :—To study the effect, on yield, of sowing cereal in between legume rows in different proportions.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Tur*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 20.8.1954. (iv) (a) Two harrowings. (b) Drilling. (c) 10 lb./ac. for both the crops. (d) 3′ between rows. (e) N.A. (v) Nil. (vi) *Jowar* : B.P.-53 (late) and *tur* : local (medium). (vii) Unirrigated. (viii) One weeding and 2 interculturings. (ix) 81.54″. (x) *Jowar* : 18 2.1955 and *tur* : 21.4.1955.

2. TREATMENTS :

1. *Kharif jowar* alone.
2. *Tur* alone.
3. *Tur* and *jowar* mixed sown in 1 : 1 proportion.
4. *Tur* and *jowar* mixed sown in 2 : 1 proportion.
5. *Tur* and *jowar* mixed sown in 3 : 1 proportion.
6. *Tur* and *jowar* row sowing in 1 : 1 proportion.
7. *Tur* and *jowar* row sowing in 2 : 1 proportion.
8. *Tur* and *jowar* row sowing in 3 : 1 proportion.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 33′×40′. (b) 24′×36′ for 1 : 1 and 3 : 1 proportions and 27′×32′ for 2 : 1 proportion. (vi) 6′ surrounding the experiment was kept as border (vi) yes.

4. GENERAL :

(i) Growth was checked due to continuous rains. (ii) 40 % attack of stem borer on *jowar*. Heavy attack of pod borer on *tur*. (iii) Grain yield. (iv) (a) 1952—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Season was abnormal. (vii) Nil.

5. RESULTS :

(i) 55.76 Rs./ac. (ii) 7.96 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	55.20	35.54	70.58	70.83	67.43	51.04	43.48	51.93

S.E./mean =3.98 Rs./ec.

Crop :- Jowar and Tur *(Kharif)*. **Ref :- Gj. 55(48).**

Site :- Agri. Res. Stn., Surat. **Type :- 'X'.**

Object :—To see the effect of legume (Tur) on Cereal (Jowar) and to keep the fertility of soil.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Tur*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 28.7.1955. (iv) (a) Nil. (b) Drilling. (c) *Jowar*—8 lb./ac. ; *tur*—10 lb./ac. (d) 3′×1′. (e). Nil. (v) Nil. (vi) *Jowar*—B.P.-53 ; *Tur*—local. (vii) Unirrigated. (viii) 1 thinning, 3 interculturings and weeding. (ix) 26.98″. (x) *Jowar*—28.2.1956 ; *tur*—6.4.1956.

2. TREATMENTS :

Same as in expt. no. 54(67) above.

3. DESIGN :

(i) R B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 33′×40′. (b) 24′×36′ for 1 : 1 proportions and 3 : 1 and 27′×32′ for 2 : 1 proportion. (v) N.A. (vi) Yes.

4 GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952—contd. (modified in 1954). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 36.99 Rs./ac. (ii) 5.49 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	38.82	17.31	45.37	45.54	37.47	46.55	33.27	31.59

S.E./mean =2.75 Rs./ac.

Crop :- Jowar and Tur *(Kharif)*. **Ref :- Gj. 57(64).**

Site :- Agri. Res. Stn., Surat. **Type :- 'X'.**

Object :—To see the effect of the legume (Tur) on cereal (Jowar) and to keep the fertility of soil.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Tur*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 16.8.1957. (iv) (a) Nil. (b) Drilling. (c) 8 lb./ac. for *jowar* and 10 lb./ac. for *tur*. (d) 3′×1′. (e) N.A. (v) Nil. (vi) *Jowar*—B.P.-53 ; *Tur*—local. (vii) Unirrigated. (viii) 3 weedings and 3 interculturings. (ix) 33.41″. (x) *Jowar*—26.2.1958 ; *Tur*—7.4.1958.

2. TREATMENTS :

1. *Jowar* only.
2. *Tur* only.
3. *Tur+Jowar* : mixed cropping in 1 : 1
4. *Tur+Jowar* : mixed cropping in 2 : 1
5. *Tur+Jowar* : mixed cropping in 3 : 1
6. *Tur+Jowar* : row sowing in 1 : 1
7. *Tur+Jowar* : row sowing in 2 : 1
8. *Tur+Jowar* : row sowing in 3 : 1

The proportion denotes the proportion of seed for each crop.

3. DESIGN :

(i, R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 33′×40′. (b) 24′×36′ for 1 : 1 and 3 : 1 proportions and 27′×32′ for 2 : 1 proportion. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 91.75 Rs./ac. (ii) 14.67 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	96.17	48.92	121.13	109.43	100.83	102.09	75.25	80.16

S.E./mean =7.34 Rs./ac.

Crop :- Jowar and Tur *(Kharif)*. **Ref :- Gj. 58(47).**

Site :- Agri. Res. Stn., Surat. **Type :- 'X'.**

Object :—To see the effect of legume (Tur) on cereal (Jowar) and to keep the fertility of soil.

1. BASAL CONDITIONS :

(i) (a) *Jowar— Tur*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 5.8.1958 ; resowing on 20.9.1958 and 6.10.1958. (iv) (a) Nil. (b) Drilling. (c) 8 lb./ac. for *Jowar* ; 10 lb./ac. for *tur*. (d) 3′×1′. (e) N.A. (v) Nil. (vi) *Jowar*—B.P.-53 ; *Tur*—local. (vii) Unirrigated. (viii) 1 weeding and 3 interculturings. (ix) 44.80″. (x) *Jowar* : 1.4.1959 ; *Tur* : 8.4.1959.

2. TREATMENTS :

Same as in expt. no. 57(64) above.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 33′×40′. (b) 24′×36′ for 1 : 1 and 3 : 1 proportions and 27′×32′ for 2 : 1 proportion. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Due to continuous rains the crops were washed away and resowing was done. (ii) Army-worm and cater-pillers. No control measures taken. (iii) Grain yield. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 71.1 Rs./ac. (ii) 10.89 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	16.76	102.85	93.27	76.57	77.89	56.22	65.42	80.16

S.E./mean =5.45 Rs./ac.

Crop :- Jowar and Tur *(Kharif)*. **Ref :- Gj. 59(26).**

Site :- Agri. Res. Stn., Surat. **Type :- 'X'.**

Object :—To see the effect of Tur on Jowar and to keep the fertility of soil.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Tur*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 12.8.1959. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. for *jowar* ; 10 lb./ac. for *tur*. (d) 3′×1′. (e) —. (v) Nil. (vi) *Jowar*—B.P.-53 ; *tur*—local. (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) 70.77″. (x) *Jowar* : 14.3.1960 ; *tur* : April 1960.

2. TREATMENTS :

Same as in expt. no. 57(64) on page 423.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 33′×40′. (b) 24′×36′ for 1 : 1 and 3 : 1 proportions; 29′×32′ for 2 : 1 proportion. (v) —. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 77.06 Rs./ac. (ii) 15.88 Rs./ac. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ac.

Treatment	1	2	3	4	5	6	7	8
Av. value	77.89	41.22	90.49	89.62	99.95	95.79	73.61	47.89

S.E./mean =7.94 Rs./ac.

Crop :- Cotton and Tur. **Ref :- Gj. 54(66).**

Site :- Agri. Res. Stn., Surat. **Type :- 'X'.**

Object :—To study the effect of *rabi* Tur, a leguminous crop, raised with and without phosphatic manure on *kharif* Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton and *Tur* after *Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton : 24.6.1954 ; *Tur* : 11.10.1954. (iv) (a) 2 harrowings, sowing. (b) Drilling for *Tur* and dibbling for cotton. (c) N.A. (d) 3′ distance between rows and thinning out to 1′ distance between plants for *tur*. 6′×2′ for cotton and thinned. (e) 1 plant/hill for cotton. (v) N.A. (vi) Cotton : *Suyog* (late), *tur* : local (medium). (vii) Unirrigated. (viii) 1 thinning, 1 weeding and 3 interculturings. (ix) 81.54″. (x) Cotton on 3.4.1953 and 1.5.1955. and *tur* on 8.5.1955.

2. TREATMENTS :

1. 0 lb./ac. of P_2O_5 in the form of Superphosphate.
2. 50 lb./ac. of P_2O_5 in the form of Superphosphate.
3. 100 lb./ac. of P_2O_5 in the form of Superphosphate.
4. 150 lb./ac. of P_2O_5 in the form of Superphosphate.
5. Cotton (*Suyog*).

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ alround. (vi) Yes.

4. GENERAL :

(i) Germination of cotton was good but checked by heavy rain. *Tur* growth was satisfactory. (ii) There was attack of aphids and pod-borer to *tur* upto 40%. (iii) Growth, height, number of standing plants and yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) The analysis of the incomplete Latin square is under taken. (vii) Season was abnormal. Data on cotton was N.A.

5. RESULTS :

(i) 533.97 lb./ac. (ii) 61.3 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of *tur* in lb./ac.

Treatment	1	2	3	4	5
Av. yield	534.50	519.82	522.40	559.50	N.A.

S.E./mean =27.42 lb./ac.

Crop :- Cotton and Groundnut *(Kharif)*. **Ref :- Gj. 56(121).**
Site :- Agri. Res. Farm, Umrala. **Type :- 'X'.**

Object :—To study the economy of mixed cropping of Cotton and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 8.7.1956. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) 3′ for groundnut, cotton and mixed. (e) —. (v) Nil. (vi) Cotton : Co$_2$—170, Groundnut : A-K 12-24. (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) N.A. (x) Cotton : 28.2.1957 ; Groundnut : N.A.

2. TREATMENTS :

1. Cotton alone.
2. Groundnut alone.
3. Cotton and groundnut mixed cropping (ratio of mixture N.A.).

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 24′×18′. (b) 18′×6′. (v) 3′×6′. (vi) Yes.

4. GENERAL :

(i) Groundnut : satisfactory ; cotton : not satisfactory. (ii) N.A. (iii) Seed cotton and groundnut pod. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 253.42 Rs./ac. (ii) 63.12 Rs./ac. (iii) Treatments differ highly significantly. (iv) Av. value of the produce as a whole in Rs./ac.

Treatment	1	2	3
Av. value	125.70	313.24	321.31

S.E./mean =25.77 Rs./ac.

Crop :- Cotton and Groundnut. **Ref :- Gj. 57(117).**
Site :- Agri. Res. Farm, Umrala. **Type :- 'X'.**

Object :—To study the economy of mixed cropping of Cotton and groundnut.

1. BASAL CONDITIONS :

(i) Nil. (b) and (c) N.A. (ii) (a) Medium. (b) N.A. (iii) 28.6.1957. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) 3′ between rows. (e) N.A. (v) Nil. (vi) Cotton : Co_2—170 and groundnut : AK—12-24. (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) N.A. (x) Groundnut : 15.10.1957 and cotton : 19.12.1957 and 2.2.1958.

2. TREATMENTS :

1. Cotton as a sole crop.
2. Groundnut as a sole crop.
3. Cotton and groundnut as mixed crop.
   (Ratio of mixture : N.A.).

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 36′×18′. (b) 30′×12′. (v) 3′ alround. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Seed cotton and groundnut pods. (iv) (a) 1956-1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 182.8 Rs./ac. (ii) 26.26 Rs./ac. (iii) Treatments do not differ significantly. (iv) Av. money value of produce in Rs./ac.

Treatment	1	2	3
Av. value	164.6	188.6	195.4

S.E./mean =10.72 Rs./ac.

Crop :- Chiku. **Ref :- Gj. 54(37).**

Site :- Fruit Res. Stn., Gandevi. **Type :- 'CM'.**

Object :—To study the different root stocks used for propagating Chiku in combination with manurial effect with regard to growth and yield of plants.

1. BASAL CONDITIONS :

(i) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Gandevi. (iii) Grafting. (iv) Kalipath. (v) 26.10.1942 and 14.12.1942. Spacing between plants : 15′×15′. (vi) One to two years old. (vii) Nil. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) 64.59″. (xii) 2.4.1954 to 29.3.1955.

2. TREATMENTS :

Main-plot treatments :
All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=9$ lb./tree.
(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=9$ lb./tree.
(3) 2 levels of K_2O as Pot. Sul. : $K_0=0$ and $K_1=3.60$ lb./tree.

Sub-plot treatments :

3 root stocks : R_0=*Chiku* on *Gootie*, R_1=*Chiku* on *Chiku* and R_2=*Chiku* on *Rayan*.
Manures applied in two doses : ⅔ in April and ⅓ in October, 1954.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot (v) One ring round the main-plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height and girth measurements. No. and wt. of *chiku*. (iv) (a) 1942—contd. (b) N.A. (v) and (vi) Nil.

5. RESULTS :

(i) 60.4 lb./tree. (ii) (a) 35.01 lb./tree. (b) 26.37 lb./tree. (iii) Main effect of R is significant. All other effects are not significant. (iv) Av. yield of *chiku* in lb./tree.

	R_0	R_1	R_2	P_0	P_1	K_0	K_1	Mean
N_0	41.5	36.9	71.1	42.4	57.2	56.9	42.7	49.8
N_1	82.7	50.6	80.3	63.3	79.1	70.6	71.8	71.2
Mean	62.1	43.7	75.7	52.8	68.1	63.7	57.2	60.4
K_0	58.0	50.8	82.4	53.2	74.3			
K_1	66.2	36.7	69.0	52.5	62.0			
P_0	63.9	33.4	61.3					
P_1	60.3	54.1	90.1					

S.E. of difference of two

1. N, P or K marginal means	=10.11 lb./tree.
2. R marginal means	= 9.32 lb./tree.
3. R means at the same level of N, P or K	=13.18 lb./tree.
4. N, P or K means at the same level of R	=14.78 lb./tree.
S.E. of body of N×P, N×K or P×K table	=10.11 lb./tree.

Crop :- Chiku. **Ref :- Gj. 55(24).**

Site :- Fruit Res. Stn., Gandevi. **Type :- 'CM'.**

Object :—To study the different root stocks used for propagating Chiku in combination with manurial effect with regard to growth and yield of plants.

1. BASAL CONDITIONS :

(i) to (x) Same as in expt. no. 54(37) on page 426. (xi) 65.51″. (xii) 2.4.1955 to 24.3.1956.

2. TREATMENTS :

Main-plot treatments :
All combinations of (1), (2) and (3)
(1) 2 levels of N as A/S : N_0=0 and N_1=9.75 lb./tree.
(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1 = 9.75 lb./tree.
(3) 2 levels of K_2O as Pot. Sul. : K_0=0 and K_1=3.93 lb./tree.

Sub-plot treatments :
3 root stocks : R_0=*Chiku* on *Gootie*, R_1=*Chiku* on *Chiku* and R_2=*Chiku* on *Rayan*.
Manures applied in two doses : 2/3 in April and 1/3 in October, 1955.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 2 trees/sub-plot. (v) One plant ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height and girth measurements. Wt. and no. of *chikus*. (iv) (a) 1942—contd. (b) Nil. (v) and (vi) Nil.

5. RESULTS :

(i) 151.6 lb./tree. (ii) (a) 41.74 lb./tree. (b) 56.41 lb./tree. (iii) Main effects of N and R are highly significant. All other effects are not significant. (iv) Av. yield of *chiku* in lb./tree.

	R_0	R_1	R_2	P_0	P_1	K_0	K_1	Mean
N_0	187.9	40.0	94.7	110.5	104.5	113.3	101.7	107.5
N_1	240.6	120.5	226.1	189.6	202.0	200.2	191.3	195.8
Mean	214.2	80.2	160.4	150.0	153.3	156.7	146.5	151.6
K_0	231.3	97.2	141.8	154.9	158.6			
K_1	197.2	63.3	179.0	145.1	147.9			
P_0	226.6	84.7	138.8					
P_1	201.9	75.9	182.0					

S.E. of difference of two

1. N, P or K marginal means =12.05 lb./tree.
2. R marginal means =19.94 lb./tree.
3. R means at the same level of N, P or K =28.20 lb./tree.
4. N, P or K means at the same level of R =25.98 lb./tree.

S.E. of body of $N \times P$, $N \times K$ or $P \times K$ table =12.05 lb./tree.

Crop :- Chiku. **Ref :- Gj. 56(22).**

Site :- Fruit Res. Stn., Gandevi. **Type :- 'CM'.**

Object :—To study the different root stocks used for propagating Chiku in combination with manurial effect with regard to growth and yield of plants.

1. BASAL CONDITIONS :

(i) to (x) Same as in expt. no. 54(37) on page 426. (xi) 83.08″. (xii) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=10.51$ lb./tree.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=10.51$ lb./tree.

(3) 2 levels of K_2O as Pot. Sul. : $K_0=0$ and $K_1=4.23$ lb./tree.

Sub-plot treatments :

3 root stocks : R_0=*Chiku* on *Gootie*, R_1=*Chiku* on *Chiku* and R_2=*Chiku* on *Rayan.*

Manures applied in two doses : $\frac{2}{3}$ in April and $\frac{1}{3}$ in October, 1956.

3. DESIGN :

Same as in expt. no. 55(24) on page 427.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height and girth measurements, wt. and no. of *chiku.* (iv) (a) 1942—contd. (b) Nil. (v) and (vi) Nil.

5. RESULTS :

(i) 89.6 lb./tree. (ii) (a) 33.33 lb./tree. (b) 34.18 lb./tree. (iii) Main effects of N and R are highly significant. Interaction $N \times R$ is significant. No other effect is significant. (iv) Av. yield of *chiku* in lb./tree.

	R_0	R_1	R_2	P_0	P_1	K_0	K_1	Mean
N_0	62.6	35.4	106.8	71.9	64.6	68.1	68.5	68.3
N_1	139.5	75.0	118.2	113.6	108.2	121.0	100.8	110.9
Mean	101.1	55.2	112.5	93.8	86.4	94.5	84.6	89.6
K_0	93.4	63.1	127.1	92.7	96.4			
K_1	108.8	47.2	97.8	95.0	76.4			
P_0	102.0	47.9	128.3					
P_1	100.1	62.4	96.7					

S.E. of difference of two

1. N, P or K marginal means = 9.62 lb./tree.
2. R marginal means =12.08 lb./tree.
3. R means at the same level of N, P or K =17.09 lb./tree.
4. N, P or K means at the same level of R =16.94 lb./tree.

S.E. of body of N×P, N×K or P×K table = 9.62 lb./tree.

Crop :- Chiku. **Ref :- Gj. 57(22).**

Site :- Fruit Res. Stn., Gandevi. **Type :- 'CM'.**

Object :—To study the different root stocks used for propagating Chiku in combination with manurial effect with regard to growth and yield of plants.

1. BASAL CONDITIONS :

(i) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Gandevi. (iii) Grafting. (iv) Kalipath. (v) 26.10.1942 and 14.12.1942. Spacing between plants : 15′×15′. (vi) One to two years old. (vii) Nil. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) 55″. (xii) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=11.28$ lb./tree.
(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=11.28$ lb./tree.
(3) 2 levels of K_2O as Pot. Sul. : $K_0=0$ and $K_1=4.50$ lb./tree.

Sub-plot treatments :

3 root stocks : R_0=*Chiku* on *Gootie*, R_1=*Chiku* on *Chiku* and R_3=*Chiku* on *Rayan.*

Manures applied in two doses : $\frac{2}{3}$ in April and $\frac{1}{3}$ in October, 1957.

3. DESIGN :

Same as in expt. no. 55(24) on page 427.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Wt. and no. of *chiku.* (iv) (a) 1942—contd. (b) Nil. (v) and (vi) Nil.

5. RESULTS :

(i) 99 lb./tree. (ii) (a) 34.62 lb./tree. (b) 26.23 lb./tree. (iii) Main effect of R is highly significant while effect of N is significant. No other effect is significant. (iv) Av. yield of *chiku* in lb./tree.

	R_0	R_1	R_2	P_0	P_1	K_0	K_1	Mean
N_0	61	36	113	65	75	72	67	70
N_1	150	92	141	113	143	129	127	128
Mean	105	64	127	89	109	101	97	99
K_0	96	72	132	90	111			
K_1	114	55	122	87	106			
P_0	94	55	117					
P_1	116	73	137					

S.E. of difference of two

1. N, P or K marginal means = 9.99 lb./tree.
2. R marginal means = 9.27 lb./tree.
3. R means at the same level of N, P or K =13.12 lb./tree.
4. N, P or K means at the same level of R =14.63 lb./tree.

S.E. of body of N×P, N×K or P×K table = 9.99 lb./tree.

Crop :- Chiku. **Ref :- Gj. 58(16).**

Site :- Fruit Res. Stn., Gandevi. **Type :- 'CM'.**

Object :—To study the different root stocks used for propagating Chiku in combination with manurial effect with regard to growth and yield of plants.

1. BASAL CONDITIONS :

(i) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Gandevi. (iii) Grafting. (iv) Kalipath. (v) 26.10.1922 and 14.12.1942. Spacing between plants : 15′×15′. (vi) One to two years old. (vii) Nil. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) 102.6″. (xii) N.A.

2. TREATMENTS :

Main-plot treatments :
All combinations of (1), (2) and (3)
(1) 2 levels of N as A/S : $N_0=0$ and $N_1=12$ lb./tree.
(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=12$ lb./tree.
(3) 2 levels of K_2O as Pot. Sul. : $K_0=0$ and $K_1=4.82$ lb./tree.

Sub-plot treatments :
3 root stocks : R_0=*Chiku* on *Gootie*, R_1=*Chiku* on *Chiku* and R_3=*Chiku* on *Rayan*.
Manures applied in two doses : ⅔ in April and ⅓ in October, 1958.

3. DESIGN :

Same as in experiment no. 55(24) on page 427.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height and girth measurements. Wt. and no. of *chiku*. (iv) (a) 1942—contd. (v) and (vi) Nil.

5. RESULTS :

(i) 94.5 lb./tree. (ii) (a) 58.84 lb./tree. (b) 35.16 lb./ac. (iii) Only main effects of N and R are highly significant. (iv) Av. yield of *chiku* in lb./tree.

	R_0	R_1	R_2	P_0	P_1	K_0	K_1	Mean
N_0	61.3	26.3	130.7	69.6	75.9	76.3	69.2	72.8
N_1	138.9	54.5	155.2	122.0	110.3	103.3	129.0	116.2
Mean	100.1	40.4	142.9	95.8	93.1	89.8	99.1	94.5
K_0	88.4	47.3	133.8	92.6	87.0			
K_1	111.8	33.5	152.1	99.0	99.2			
P_0	104.2	42.1	141.2					
P_1	96.0	38.6	144.7					

S.E. of difference of two

1. N, P or K marginal means =16.99 lb./tree.
2. R marginal means =12.43 lb./tree.
3. R means at the same level of N, P or K =17.58 lb /tree.
4. N, P or K means at the same level of R =22.25 lb./tree.

S.E. of body of N×P, N×K or P×K table =16.99 lb./tree.

Crop :- Chiku. **Ref :- Gj. 59(62).**

Site :- Fruit Res. Stn., Gandevi. **Type :- 'CM'.**

Object :—To study the different root stocks used for propagating Chiku in combination with manurial effect with regard to growth and yield of plants.

1. BASAL CONDITIONS :

(i) to (x) same as in expt. no. Gj 54(37) on page 426. (xi) 105.75″ (xii) N A.

2. TREATMENTS :

Main-plot treatments

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=12.77$ lb./tree.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=12.77$ lb./tree.

(3) 2 levels of K_2O as Pot. Sul. : K_0 0 and $K_1=5.13$ lb./tree.

Sub-plot treatments

3 root stocks : R_0=*Chiku* on *Gootie*, R_1= *Chiku* on *Chiku*, R_2=*Chiku* on *Rayan*.

Manures applied in two doses : $\frac{2}{3}$ in April $\frac{1}{3}$ in October 1959.

3. DESIGN :

Same as expt. no. 55(24) on page 427.

4. GENERAL :

(i) Medium. (ii) Nil. (iii) Weight and no. of *chiku*. (vi) (a) 1942—contd. (b) Nil. (v) and (vi) Nil.

5. RESULTS :

(i) 135.9 lb./tree. (ii) (a) 59.91 lb./tree. (b) 31.52 lb./tree. (iii) Main effects of N and R are highly significant. Interactions N×R and N×P are significant. Other effects are not significant. (iv) Av. yield of *chiku* in lb./tree.

	R_0	R_1	R_2	P_0	P_1	K_0	K_1	Mean
N_0	69.5	42.3	162.1	84.1	98.5	96.1	86.4	91.3
N_1	211.5	108.3	222.1	164.0	197.2	159.9	201.4	180.6
Mean	140.5	75.3	192.1	124.0	147.8	128.0	143.9	135.9
K_0	119.3	72.4	192.3	122.9	133.1			
K_1	161.7	78.2	191.8	125.1	162.6			
P_0	134.7	45.9	191.5					
P_1	146.2	104.7	192.6					

S.E. of difference of two

1. N, P or K marginal means =17.29 lb./tree.
2. R marginal means =11.14 lb./tree.
3. R means at the same level of N, P or K =15.76 lb./tree.
4. N, P or K means at the same level of R =21.56 lb./tree.

S.E. of body of N×P, N×K or P×K table =17.29 lb./tree.

Crop :- Mug—Jowar *(Kharif)*. **Ref :- Gj. 57(129).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To find out the effective dose of P for Mug and its residual effect on Jowar crop.

1. BASAL CONDITIONS :

(i) (a) *Mug—Jowar*. (b) and (c) N.A. (ii) (a) Sandy loam to loam (alluvial in nature). (b) Refer soil analysis, Vasad. (iii) 30.6.1957. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) 15 lb./ac. (d) 12″×6″. (e) 1. (v) Nil. (vi) *Chinamug* (V—781). (vii) Unirrigated. (viii) One interculturing. (ix) 25.03″. (x) 31.8.1957 and 4.9.1957.

2. TREATMENTS .

3 doses of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.
P_2O_5 applied to *Mug* crop on 29.6.1957.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 24′×30′. (b) 22′×28′. (v) 1′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Pod and top yield. (iv) (a) 1957—1960. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) No rains after August and hence *Jowar* crop could not be taken.

5. RESULTS :

(i) 767 lb./ac. (ii) 152.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of pod in lb./ac.

Treatment	P_0	P_1	P_2
Av. yield	740	775	785

S.E./mean = 62.14 lb./ac.

Crop :- Chinamug and Jowar *(Kharif)*. **Ref :- Gj. 58(130).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To find out the effective dose of P for Mug and its residual effect on succeeding Jowar crop.

1. BASAL CONDITIONS :

(i) *Mug—Jowar*. (b) *Jowar* and *Mug*. (c) Nil for *jowar* and as per treatments for *mug*. (ii) (a) Sandy loam to loam (alluvial in nature). (b) Refer soil analysis, Vasad. (iii) *Mug* : 27.6.1958, *jowar* : 18.9.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) *Mug* : dibbling, *jowar* : drilling. (c) *Mug* : 15 lb./ac., *jowar* : 40 lb./ac., (d)12″×6″ for *jowar* and for *mug* 12″. (e) 1. (v) Nil. (vi) *Chinamug* (V—781), *Sundhia* (S—1049). (vii) Unirrigated. (viii) 2 intercultrings. (ix) 42.44″. (x) *Mug* : 19.8.1958 to 17.9.1958. *Jowar* : 6.12.1958.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(129) on page 432.
P_2O_5 applied to *mug* on 26.6.1958.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod and top yield for *mug* and fodder yield for *jowar*. (iv) (a) 1957–1960. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

RESULTS :

Chinamug

(i) 392 lb./ac. (ii) 50.35 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of pod in lb./ac.

Treatment	P_0	P_1	P_2
Av. yield	340	402	433

S.E /mean = 20.56 lb./ac.

Jowar

(i) 1388 lb./ac. (ii) 129.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in lb./ac.

Treatment	P_0	P_1	P_2
Av. yield	1324	1379	1461

S.E./mean = 52.83 lb./ac.

Crop :- Chinamug and Jowar *(Kharif)*. **Ref :- Gj. 59(147).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To find out the effective dose of P for Mug and its residual effect on succeeding Jowar crop.

BASAL CONDITIONS :

(i) *Mug—Jowar*. (b) *Jowar* and *Mug*. (c) Nil for *jowar* and as per treatments for *mug*. (ii) (a) Sandy loam to loam (alluvial in nature). (b) Refer soil analysis, Vasad. (iii) *Mug* : 4.7.1959 ; *jowar* : 27.9.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) *Mug* dibbled and *jowar* drilled. (c) *Mug* : 15 lb./ac. ; *jowar* : 40 lb./ac. (d) *Mug* : 12″×6″ ; *jowar* : 12″. (e) *Mug* : 1. (v) Nil. (vi) *Chinamug* (V—781) ; *Sundhia* (S—1049). (vii) Unirrigated. (viii) 3 interculturings. (ix) 44.22″. (x) *Mug* : 6.9.1959 and 25.9.1959 ; *Jowar* : 10.12.1959.

2. TREATMENTS and 3. DESIGN

Same as in expt. no. 57(129) on page 432.
P_2O_5 applied to *mug* crop on 28.6.1959.

4. GENERAL :

Same as in expt. no. 58(130) on page 432.

5. RESULTS :

Chinamug

(i) 246 lb./ac. (ii) 25.88 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of pod in lb./ac.

Treatment	P_0	P_1	P_2
Av. yield	202	251	284

S.E./mean = 10.57 lb./ac.

Jowar

(i) 1292 lb./ac. (ii) 143.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of fodder in lb./ac.

Treatment	P_0	P_1	P_2
Av. yield	1167	1414	1296

S.E./mean = 58.64 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 57(131).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To find out the effective dose of N for Cotton with Sannhemp grown in *situ* between cotton rows.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Bajra*+*Mug*. (b) *Bajra* and *mug*. (c) Nil. (ii) (a) Sandy loam to loam (alluvial in nature). (b) Refer soil analysis, Vasad. (iii) 13.7.1957. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) Cotton : 8 lb./ac., sann : 40 lb./ac. (d) Cotton : 3′×1′. (e) N.A. (v) Sann—G.M. (vi) CO_2—134. (vii) Unirrigated. (viii) 5 interculturings. (ix) 25.03″. (x) 26.11.1957 to 21.1.1958 (5 pickings).

2. TREATMENTS :

4 doses of N as A/S : $N_0=0$, $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.
N applied on 24.8.1957 in bands 6″ on either side of cotton plants.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 50′×25′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Crop was not satisfactory due to shortage of rains. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1957—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) No rain received after manuring. (vii) Nil.

5. RESULTS :

(i) 220 lb./ac. (ii) 42.18 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of seed cotton in lb./ac.

Treatment	N_0	N_1	N_2	N_3
Av. yield	209	216	237	219

S.E./mean = 17.22 lb./ac.

Crop :- Cotton ***(Kharif).*** **Ref :- Gj. 58(126).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To find out the effective dose of N for Cotton with Sannhemp grown in *situ* between cotton rows.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Bajra*+*Mug*. (b) *Bajra* and *mug*. (c) Nil. (ii) (a) Sandy loam to loam (alluvial in nature). (b) Refer soil analysis, Vasad. (iii) 6.7.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) 8 lb./ac. (d) 3′×1′. (e) N.A. (v) 3500 lb./ac. of sann G.M. (vi) CO_2—134. (vii) Unirrigated. (viii) 7 interculturings. (ix) 42.44″. (x) 5.12.1958 to 25.2.1959 (10 pickings).

2. TREATMENTS :

Same as in expt. no. 57(131) above.
N as A/S applied on 24.7.1958 in bands 6″ on either side of cotton plants.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 45′×25′. (b) 43′×23′. (v) 1′×1′. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of pink boll-worms and red cotton bugs. Controlled by applying Endrex-20. (iii) Seed cotton yield. (iv) (a) 1957—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 651.5 lb./ac. (ii) 74.83 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of seed cotton in lb./ac.

Treatment	N_0	N_1	N_2	N_3
Av. yield	543	643	686	734

S.E./mean = 30.55 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 59(148).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To find out the effective dose of N for Cotton with Sannhemp grown in *situ* between cotton rows.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Bajra*+*Mug*. (b) *Bajra* and *mug*. (c) Nil. (ii) (a) Sandy loam to loam (alluvial in nature). (b) Refer soil analysis, Vasad. (iii) 27.6.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) 8 lb./ac. (d) 3′×1′. (e) —. (v) 5924 lb./ac. of sann—G.M. (vi) CO_2—134. (vii) Unirrigated. (viii) 4 weedings and 2 harrowings. (ix) 44.22″. (x) 30.12.1959 to 3.4.1960.

2. TREATMENTS :

Same as in expt. no. 57(131) on page 434.
N applied on 24.7.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 50′×25′. (b) 46′×21′. (v) 2′×2′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Yield of seed cotton. (iv) (a) 1957—1961. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Boll formation and hence yield was not good due to excessive rains.

5. RESULTS :

(i) 202 lb./ac. (ii) 47.80 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of seed cotton in lb./ac.

Treatment	N_0	N_1	N_2	N_3
Av. yield	167	199	220	222

S.E./mean = 19.52 lb./ac.

Crop :- Cotton *(Kharif).* **Ref :- Gj. 57(132).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of Cotton to different forms of nitrogenous fertilizers in combination with a crop of Guar.

1. BASAL CONDITIONS :

(i) (a) Cotton+*Guar*—*Jowar*+cowpea. (b) *Jowar*+cowpea. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 1.7.1957. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) 8 lb./ac. (d) 3′×1′. (e) 1. (v) Nil. (vi) CO_2—134. (vii) Unirrigated. (viii) 4 interculturings. (ix) 25.04″. (x) 27.11.1957 to 26.2.1958 (5 pickings).

2. TREATMENTS :

3 sources of N : S_1=A/S, S_2=A/C and S_3=A/S/N
40 lb./ac. of N applied on 19.8.1957 in bands 6″ on either side of cotton rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) and (b) 30′×32′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Seed cotton yield. (iv) 1957—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) The expt. was conducted under abnormal conditions as there were no rains after application of N. (vii) *Guar* sown between cotton rows.

5. RESULTS :

(i) 115 lb./ac. (ii) 28.95 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of seed cotton in lb./ac.

Treatment	S_1	S_2	S_3
Av.yield	99	117	129

S.E/mean = 12.94 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 58(132).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of Cotton to different forms of nitrogenous fertilizers in combination with leguminous cover crop of Guar.

1. BASAL CONDITIONS :

(i) (a) Cotton+*guar*—*Jowar*+cowpea. (b) *Jowar*+cowpea. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 5.7.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) 8 lb./ac. (d) 3′×1′. (e) 1. (v) Nil. (vi) CO_2 —134. (vii) Unirrigated. (viii) 3 interculturings. (ix) 42.44″. (x) 15.11.1958 to 1.3.1959 (11 pickings).

2. TREATMENTS :

Same as in expt. no. 57(132) on page 435.
40 lb./ac. of N was applied on 24.7.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 30′×32′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1957—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) *Guar* plants had excellent growth due to good rains. This resulted in poor growth of cotton. (vii) Nil.

5. RESULTS :

(i) 224 lb./ac. (ii) 78.72 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of seed cotton in lb./ac.

Treatment	S_1	S_2	S_3
Av. yield	197	229	247

S.E./mean = 32.13 lb./ac.

Crop :- Cotton *(Kharif)*. **Ref :- Gj. 59(152).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of Cotton to different forms of nitrogenous fertilizers in combination with groundnut as cover crop.

1. BASAL CONDITIONS :

(i) (a) Cotton+Groundnut—*Jowar*+cowpea. (b) *Jowar*+cowpea. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 30.6.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) 8 lb./ac. (d) 3′×1′. (e) N A. (v) 5 tons/ac. of F.Y.M. applied on 26.5.1959. (vi) CO_2—134. (vii) Unirrigated. (viii) 3 weedings and 1 harrowing. (ix) 44.22″. (x) 28.12.1959 to 17.3.1960 (groundnut—27.10.1959).

2. TREATMENTS :

Main-plot treatments :

2 treatments : T_1=Cotton with groundnut as cover crop (2 rows of groundnut in between cotton rows) and T_2=Cotton alone (no cover crop).

Sub-plot treatments :

3 sources of 40 lb./ac. of N : S_1=A/S, S_2=A/C and S_3=A/S/N.

N applied on 1.8.1959.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 41.4′×23.7′. (b) 34.8′×17.1′. (v) 3.3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Not satisfactory due to frequent and heavy rains. (ii) Nil. (iii) Seed cotton. (iv) (a) 1957—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Frequent and heavy rains. (vii) Nil.

5. RESULTS :

(i) 105 lb./ac. (ii) (a) 19.58 lb./ac. (b) 24.96 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of seed cotton in lb./ac.

	S_1	S_2	S_3	Mean
T_1	105	111	95	104
T_2	99	109	110	106
Mean	102	110	103	105

S E. of difference of two

1. T marginal means	=	7.99 lb./ac.
2. S marginal means	=	12.48 lb./ac.
3. S means at the same level of T	=	17.64 lb./ac.
4. T means at the same level of S	=	16.47 lb./ac.

Crop :- Tobacco *(Kharif)*. **Ref :- Gj. 58(131).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of bidi Tobacco to different forms of nitrogenous fertilizers in combination with sannhemp grown in *situ*.

1. BASAL CONDITIONS :

(i) (a) Tobacco—*Kodra* + *Tur*. (b) *Kodra*+*Tur*. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) Tobacco : 18 8.1958 ; Sann : 25.6.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Transplanting. (c) —. (d) 3′×3′. (e) 1 plant/hill. (v) Sann green manure at 9184 lb./ac. applied on 25.7.1958. (vi) *Bidi* tobacco K–20. (vii) Unirrigated. (viii) 6 interculturings. (ix) 42.44″. (x) 19.11.1958 to 19.2.1959.

2. TREATMENTS :

3 sources of 80 lb./ac. of N : S_1=A/S, S_2=A/C and S_3=A/S/N.
N applied on 21.8.1958.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 48′×30′. (b) 42′×24′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Cured tobacco. (iv) (a) 1958—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Actually the expt. was to be started in 1957-1958 but due to failure of monsoon tobacco could not be sown.

5. RESULTS :

(i) 525 lb./ac. (ii) 72.97 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tobacco in lb./ac.

Treatment	S_1	S_2	S_3
Av. yield	560	406	610

S.E./mean = 29.79 lb./ac.

Crop :- Tobacco *(Kharif)*. **Ref :- Gj. 59(151).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of bidi Tobacco to different forms of nitrogenous fertilizers in combination with sannhemp grown in *situ*.

1. BASAL CONDITIONS :

(i) (a) Tobacco—*Kodra+Tur*. (b) *Kodra+Tur*. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) Tobacco : 21.8.1959 ; sann : 28.6.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Transplanting. (c) —. (d) 3′×3′. (e) 1 plant/hill. (v) Sann as G.M. at 11,648 lb./ac. applied in 13.8.1959. (vi) *Bidi* tobacco—K-20. (vii) Unirrigated. (viii) 4 interculturings. (ix) 44.22″. (x) 17.11.1959 to 12.2.1960.

2. TREATMENTS :

3 sources of 80 lb./ac. of N : S_1=A/S, S_2=A/C and S_3=A/S/N.
N applied on 27.8.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 39′×27′. (b) 33′×21′. (v) 3′ alround the net plot. (vi) Yes.

4 GENERAL :

(i) Good. (ii) Nil. (iii) Cured tobacco. (iv) (a) 1958—1961. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1109 lb./ac. (ii) 101.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of tobacco in lb./ac.

Treatment	S_1	S_2	S_3
Av. yield	1098	1083	1146

S.E./mean =41.32 lb./ac.

Crop :- Tobacco *(Kharif)*. **Ref :- Gj. 59(150).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To determine the optimum dose of N for bidi Tobacco along with sannhemp grown in *situ* to serve as cover crop.

1. BASAL CONDITIONS :

(i) (a) Tobacco—*Kodra+Tur*. (b) *Kodra+Tur*. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) Tobacco : 21.8.1959 ; sannhemp : 25.6.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Transplanting. (c) —. (d) 3′×3′. (e) 1 plant/hill. (v) Sann as G M. at 5050 lb./ac. applied on 3.8.1959. (vi) *Bidi* tobacco. (vii) Unirrigated. (viii) 3 weedings and 5 interculturings. (ix) 44.22″. (x) 16.12.1959 to 19.2.1960.

2. TREATMENTS :

4 doses of N as A/S : $N_0=0$, $N_1=67$, $N_2=90$ and $N_3=112$ lb./ac.
N applied on 28.8.1959.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 44.3′×26.6′. (b) 38.3′×20.6′. (v) 3′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Cured tobacco yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1098 lb./ac. (ii) 117.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of tobacco in lb./ac.

Treatment	N_0	N_1	N_2	N_3
Av. yield	965	1147	1125	1155

S.E./mean = 48.13 lb./ac.

Crop :- Grasses *(Kharif)*. **Ref :- Gj. 58(128).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. **Type :- 'MV'.**

Object :—To study the development of canopy and the yield of promising grasses when applied with N on bench terrace faces.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Grasses. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 11.7.1958 to 23.7.1958. (iv) (a) Nil. (b) Dibbling. (c) 2.68 lb./ac. (d) 12″×6″. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Nil. (ix) 42.44″. (x) 1.10.1958 to 18.11.1958.

2. TREATMENTS :

Main-plot treatments
3 species of grasses :V_1= *Panicum antidotale*, V_2=*Dicanthium annulatum* and V_3=*Cynoden dactylon.*
Sub-plot treatments
2 levels of N : $N_0=0$ and $N_1=40$ lb./ac.
N as A/S was applied on 18.8.1958.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 25′×6′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green fodder yield. (iv) (a) 1958—1960. (b) and (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 4065 lb./ac. (ii) (a) 3022 lb./ac. (b) 113.8 lb./ac. (iii) Main effect of V is significant while effect of N and interaction V×N are highly significant. (iv) Av. yield of green fodder in lb./ac.

	V_1	V_2	V_3	Mean
N_0	4017	3291	1258	2855
N_1	8688	4646	2493	5276
Mean	6352	3968	1875	4065

S.E. of difference of two

1.	V marginal means	= 1234.0 lb./ac.
2.	N marginal means	= 37.9 lb./ac.
3.	N means at the same level of V	= 65.7 lb./ac.
4.	V means at the same level of N	= 1234.0 lb./ac.

Crop :- Grasses *(Kharif)*. **Ref :- Gj. 59(145).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'MV'.

Object :—To study the development of canopy and the yield of promising grasses when applied with N on bench terrace faces.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 17.7.1958 to 23.7.1958. (iv) (a) Nil. (b) Dibbling. (c) 2.68 lb./ac. in nursery bed. (d) 12″×6″. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Nil. (ix) 44.22″. (x) 21.7.1959, 2.9.1959 and 5.12.1959.

2. TREATMENTS :

Same as in expt. no. 58(128) on page 439.
N applied on 21.7.1959.

3. DESIGN and 4. GENERAL :

Same as in expt. no. 58(128) on page 439.

5. RESULTS :

(i) 16624 lb./ac. (ii) (a) 9544 lb./ac. (b) 2828 lb./ac. (iii) Main effect of V is significant while effect of N is highly significant and interaction V×N is not significant. (iv) Av. yield of green fodder in lb./ac.

	V_1	V_2	V_3	Mean
N_0	17714	25700	12332	18582
N_1	16190	19844	7962	14665
Mean	16952	22772	10147	16624

S.E. of difference of two

1. V marginal means = 3896 lb./ac.
2. N marginal means = 943 lb./ac.
3. N means at the same level of V = 1633 lb./ac.
4. V means at the same level of N = 4064 lb./ac.

Crop :- Grasses *(Kharif)*. **Ref :- Gj. 59(149).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'MV'.

Object :—To study the response of some popular draught resistant grasses to the application of N on bunds.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Grasses. (c) Nil. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 1.7.1959 to 6.7.1959. (iv) (a) Nil. (b) Dibbling. (c) 2.68 lb./ac. in nursery bed. (d) 1′×1′. (e) 1 seedling/hill. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 1 interculturing. (ix) 44.22″. (x) 3 cuttings from 23.8.1959 to 23.10.1959.

2. TREATMENTS :

Main-plot treatments :

6 species of grasses : V_1=*Amphilophis glabra*, V_2=*Andropogan ixchaemum*, V_3=*Dichanthium annulatum*, V_4= *Pannicum antidolate*, V_5= *Pennisetum canchroides* and V_6 = *Pennisetum ciliares.*

Sub-plot treatments :

2 doses of N as A/S : N_0=0 and N_1=40 lb./ac.
N applied on 22.7.1959.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 32.8′×3.28′ (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Green forage yield. (iv) (a) 1959—61. (b) Yes. (c) Nil. (v) (a) and (b)N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 14517 lb./ac. (ii) (a) 5201 lb./ac. (b) 1082 lb./ac. (iii) Main effects of V and N are highly significant. Interaction V×N is not significant. (iv) Av. yield of green fodder in lb./ac.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_0	3569	18058	9082	20645	18004	23857	15536
N_1	2980	15577	6352	17754	16951	21377	13498
Mean	3275	16818	7717	19195	17478	22617	14517

S.E. of difference of two
1. V marginal means = 2326 lb./ac.
2. N marginal means = 279 lb./ac.
3. N means at the same levels of V = 685 lb./ac.
4. V means at the same level of N = 2375 lb./ac.

Crop :- Legumes *(Kharif)*. **Ref :- Gj. 57(130).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of cultivated legumes to phosphatic manuring which are likely to serve as cover crops.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 4.7.1957. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) N.A. (d) 1′×1′. (e) 1. (v) Nil. (vi) Improved strains. (vii) Unirrigated. (viii) 3 interculturings. (ix) 25.04″. (x) 6.9.1957 to 10.11.1957.

2. TREATMENTS :

Main-plot treatments :

8 legumes : L_1=Cowpea, L_2=Groundnut, L_3=*Guar*, L_4=*Moth*, L_5=*Mung*, L_6=Soyabean, L_7=Sannhemp and L_8=*Wal*.

Sub-plot treatments :

3 doses of P_2O_5 as Super : P_0=0, P_1=30 and P_2=60 lb./ac.

P_2O_5 broadcast on 29.6.1957.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 24′×15′. (b) 22′×13′. (v) 1′×1′. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Nil. (iii) Legume seed. (iv) (a) 1957—60. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Due to shortage of rains the crop in plots L_3, L_6 and L_8 failed. Expt. analysed as R.B.D.

5. RESULTS :

(i) and (ii) As below. (iii) Treatment differences are not significant. (iv) Av. yield of legumes in lb./ac.

	L_1	L_2	L_4	L_5	L_7
P_0	722	963	132	500	441
P_1	801	1026	109	498	476
P_2	862	1027	134	459	473
Mean	795	1005	125	486	463
S.E./plot.	171.2	243.2	57.6	128.6	137.1

Crop :- Legumes *(Kharif)*. **Ref :- Gj. 58(129).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of cultivated legumes likely to serve as cover crops to phosphatic manuring.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 24.6.1958. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c)—. (d) 1′×1′. (e) 1. (v) Nil. (vi) Improved strains. (vii) Unirrigated. (viii) 2 interculturings. (ix) 42.44″. (x) 17.7.1958 to 11.10.1958.

2. TREATMENTS :

Same as in expt. no. 57(130) on page 441.
Super broadcast on 23.6.1958.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 20′×18′ for replications I, II and III and 12′×18′ for replications IV, V and VI. (b) 18′×16′ for replications I, II and III and 10′×16′ for replications IV, V and VI. (v) 1′×1′. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (b) Virus disease of cowpea was observed. (iii) Seed and pod yield of legumes. (iv) (a) 1957—1960 (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Soyabean and *china-mug* in replications IV and VI were severely affected and germination failed in spite of dibbling the seeds thrice. Expt. was analysed as R.B.D. for different legumes.

5. RESULTS :

(i) and (ii) As below. (iii) Only L_2 effect is highly significant. No other effect is significant. (iv) Av. yield of legume in lb./ac.

	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8
P_0	321	1088	1463	77	260	237	944	651
P_1	319	1623	1597	131	296	156	1278	798
P_2	459	1669	1586	94	295	111	1268	619
Mean	366	1460	1549	101	284	168	1163	689
S.E./plot	147.5	227.2	248.4	70.78	136.1	83.08	247.4	134.7

Crop :- Legumes *(Kharif)*. **Ref :- Gj. 59(146).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of cultivated legumes likely to serve as cover crops to phosphatic manuring.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) 26 to 30.6.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c)—. (d) 1′×1′. (e) 1. (v) Nil. (vi) Improved strains of legumes. (vii) Unirrigated. (viii) 5 interculturings. (ix) 44.22″. (x) 2.9.1959 to 30.11.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(129) above.
Super broadcast on 28, 29.6.1959.

4. GENERAL :

(i) and (ii) N.A. (iii) Seed and pod yield of legumes. (iv) (a) 1957—1960. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) N.A. (vii) Experiment completely failed. in 1960—1961. Expt. was analysed as R.B.D. for different legumes.

5. RESULTS :

(i) and (ii) As below. (iii) Main effects of L_4, L_7 and L_8 are significant. No other effect is significant. (iv) Av. yield of legume in lb./ac.

	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8
P_0	148	1257	37	229	346	451	750	529
P_1	145	1402	37	244	174	517	803	741
P_2	223	1050	48	387	321	567	963	877
Mean	172	1236	41	287	280	512	839	716
S.E./plot	82.43	190.4	10.36	78.27	243.8	88.18	115.55	178.63

Crop :- Legumes *(Kharif)*. **Ref :- Gj. 58(127).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of cultivated legumes likely to serve as cover crops to the application of Boron and Manganese.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Vasad. (iii) N.A. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) —. (d) 12″×12″. (e) 1. (v) 60 lb./ac. of P_2O_5 as Super applied at sowing. (vi) Improved strains of legumes. (vii) Unirrigated. (viii) N.A. (ix) 42.44″. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 legumes : L_1=Cowpea, L_2=*Guar*, L_3=*Mung* and L_4=*Moth*.

Sub-plot treatments :

4 combinations of Boron and Manganese : 0=No B or Mn., B=5 lb./ac. of Boron, M=5 lb./ac. of Manganese and BM=5 lb./ac. of Boron+5 lb./ac. of Manganese.

Boron and Manganese applied at dibbling.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24′×9′. (b) 23′×8′. (v) 6″×6″. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Legumes yield. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment is analysed as R.B.D. for different legumes.

5. RESULTS :

(i) and (ii) As below. (iii) For L_1—Main effect of B alone is significant ; for L_2—Main effect of B is highly significant and interaction BM is significant ; for L_3 and L_4—No effect or interaction is significant. (iv) Av. yield of legumes in lb./ac.

	L_1	L_2	L_3	L_4
0	443	544	484	189
B	374	777	440	200
M	540	592	404	174
BM	333	655	407	170
Mean	422	642	434	183
S.E./plot	94.46	71.73	187.3	40.48

Crop :- Legumes *(Kharif)*. **Ref :- Gj. 59(144).**

Site :- Soil Cons. Res. Demonstn. and Training Centre, Vasad. Type :- 'M'.

Object :—To study the response of cultivated legumes likely to serve as cover crops to the application of Boron and Manganese.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments. (ii) (a) Sandy loam to loam. (b) N.A. (iii) 6.7.1959. (iv) (a) 1 ploughing and 1 harrowing. (b) Dibbling. (c) N.A. (d) 12″×12″. (e) 1. (v) 60 lb./ac. of P_2O_5 applied at sowing. (vi) Improved strains of legumes. (vii) Unirrigated. (viii) 3 interculturings. (ix) 44.22″. (x) 22.10.1959 to 4.12.1959.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(127)on page 443.
B and M applied on 5.7.1959.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of legumes. (iv) (a) 1958—1960. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment analysed as R.B.D. for different legumes.

5. RESULTS :

(i) and (ii) As below. (iii) Main effects of M for *guar* and *mung* crop is highly significant. Interaction B×M is significant for cowpea crop. No other effect is significant. (iv) Av. yield of legume in lb./ac.

	L_1	L_2	L_3	L_4
O	92	18	140	384
B	78	25	177	451
M	85	32	214	458
BM	111	28	196	573
Mean	91	26	182	466
S.E./plot	15.86	5.33	27.46	137.4

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